

1940.
—
QUEENSLAND.



ANNUAL REPORT
OF THE
DEPARTMENT OF AGRICULTURE
AND STOCK
FOR
THE YEAR 1939-40.

PRESENTED TO PARLIAMENT BY COMMAND.

BRISBANE :
BY AUTHORITY: A. H. TUCKER, GOVERNMENT PRINTER.

1940.
—
QUEENSLAND.

ANNUAL REPORT
OF THE
DEPARTMENT OF AGRICULTURE
AND STOCK
FOR
THE YEAR 1939-40.

PRESENTED TO PARLIAMENT BY COMMAND.

BRISBANE:
BY AUTHORITY: A. H. TUCKER, GOVERNMENT PRINTER.

A. 20—1940.

CONTENTS

	PAGE
Report of the Under Secretary	3
Plant Industry (Research)	6
Agriculture	7
Botany	9
Tropical Agriculture	9
Entomology	10
Horticulture	13
Plant Pathology	14
Plant Physiology	15
Agriculture	17
Research	7
Southern Division	17
Central Division	19
Northern Division	20
Cotton Culture	22
Sugar	4
Fruit Culture	22
Dairying	24
Pig Raising	25
Poultry	30
Veterinary Services	25
Pastoral Industry	3
Livestock	28
Sheep and Wool	29
Brands	30
Animal Etomology and Parasitology	26
Veterinary Field Work	26
Animal Nutrition Research	28
Seeds, Fertilizers, Veterinary Medicines, Pest Destroyers, and Stock Foods	31
Agricultural Chemistry	31
Publications	32
Marketing and Commodity Board Reports	32
Wild Life Preservation	5
Co-operative Association	44

REPORT OF THE DEPARTMENT OF AGRICULTURE AND STOCK FOR THE YEAR 1939-40.

TO THE HONOURABLE THE SECRETARY FOR AGRICULTURE AND STOCK.

SIR,—I have the honour to present herewith the report of the Department for the year ended 30th June, 1940.

SEASONAL CONDITIONS.

Widely-distributed and well-spaced winter rains ensured a good spring in every agricultural district and in most of the pastoral areas of the State. Stock wintered well, and in the coastal cattle country grazing conditions were satisfactory. Consequently, the departmental year opened with uncommonly good seasonal prospects, especially for cereal and fodder crop production. Abundant and succulent pastures maintained dairy output at record levels for that time of the year.

The beneficial effect of further good rains in early August was afterwards offset by drying winds. A practically rainless period of seven weeks followed, during which pastures wilted, although the outlook inland remained generally satisfactory, except in some pastoral areas in the Central-West which had missed the winter and early spring rains.

Good rains fell over a large extent of sheep country in October. Many early wheat crops were damaged by frosts of unusual severity, while late crops were retarded by dry weather. Storm rains brought partial relief. Frequent storms occurred in November, and in large portions of Western Queensland a good early summer was assured. Extensive areas of sheep country in the Central-West had the brightest late spring outlook since 1924, while the drier regions further north received substantial relief. Although storms hindered the wheat harvest, many heavy yields were bagged. Dairying prospects improved as the year advanced.

With the coming of summer, good feed was abundant in the Central-Western and Far-Western pastoral country, in parts of which the October rainfall had been the best for half a century. Less firmly established pasturage in districts where the rainfall had been much lighter dried off rapidly as the summer approached. In the agricultural areas, however, frequent storms ensured fair farming prospects. This storm frequency was not maintained. In January, high temperatures culminated in an unusually severe heat wave, aggravated by the absence of good general rains.

Late summer was remarkable for a succession of heat waves of abnormal severity, which caused a serious setback to seasonal prospects throughout the State. A series of heavy rainfalls followed which reversed the general outlook, but cyclonic weather caused high floods in many coastal and inland river basins.

Autumnal production prospects in every farming district were bright. For graziers, the winter outlook in most districts was promising. Subnormal temperatures in the southern farming districts extended the period of benefit from the soaking rains of late summer.

Then ensued a period of general dryness, which has continued to date. Reserves of subsoil moisture in the agricultural areas have lasted well, but most crops and dairy pastures now need substantial rain.

THE PASTORAL INDUSTRY

The following preliminary figures compiled by the Government Statistician indicate the statistical position of the pastoral industry, as on 1st January, 1940:—

Horses.—There is no variation in the estimated number for this year from the actual number for the previous year.

Cattle.—There was a slight increase, the estimate being 6,125,000. The previous year's total was 6,097,089.

Sheep.—Flocks aggregated 23,500,00, as against 23,158,000 in 1939. If the estimated number is sustained, the total this year will be the highest ever recorded in the history of the State.

Pigs.—The computed number is 350,000, as compared with the actual number of 325,326, in 1939.

Pasture research work was continued during the year and the improvement, preservation, and nutritional aspects of native and introduced grasses received special attention.

Under the stimulus of an excellent wet season, native grass pastures were completely re-established over vast areas.

The coastal cattle-fattening scheme has succeeded to the extent of showing that cattle brought from the interior can be fattened on suitable coastal country within the tropical regions of the State.

Fat stock values for chiller bullocks averaged 32s. per cental; other bullocks, 29s. 8d.; cows and heifers, 28s. 8d. For other classes of stock the average values per lb. were:—Wethers, 2.95d.; ewes, 2.62d.; lambs, 5.78d.; calves, 3.70d.; and swine, 6.67d.

Bacon factory returns showed an increase in killings of 74,395 over the previous year; the actual number slaughtered was 429,498. Exports during the twelve months also increased considerably.

Of the total meat exports from the Commonwealth for the year 1939-40—281,763 tons—Queensland contributed 132,350 tons, or 46.97 per cent.

Sheep values were fairly firm early in the year, but afterwards declined gradually under the influence of drier conditions, the restriction of Southern demand, and the increase in flock numbers to the overstocking point on many holdings.

Merino stud flocks increased in number, and there was a noticeable improvement in type and wool character.

Lambing percentages were well maintained, as evidenced by the fact that all previous records of flock numbers will be probably exceeded this year.

Fat lamb-raising is expanding under the influence of the progressive scheme inaugurated by the Department and now in its fifth year of operation, under which over 400 rams of British breeds have been allotted on loan. Linked with this scheme are five breeding trials in which sires of British breeds are mated with crossbred ewes, and from which useful comparative results are expected. The general average prices obtained for lambs of various crosses ranged from 16s. to 18s. 11d.

Wool appraisalment established a record for one year's production in Queensland, amounting to 670,000 bales. Under the departmental wool scheme for the benefit of small flock owners 866 bales were handled, as against 705 last year.

The formulation and use of rations for stud sheep have been continued. Experiments with pigs to determine the most economical use of home-grown foodstuffs have been commenced. The practicability of rearing calves on a milkless diet has been demonstrated. General advisory work continues as an important section of the animal nutritional services of the Department.

Drought-feeding trials of sheep were completed, and results of practical interest are summarised briefly in the annexed report on animal nutrition.

Much useful work was accomplished in co-operation with the University of Queensland and the Australian Wool Board in the clarification of knowledge of suspected poison plants in the pastoral areas.

A survey of the buffalo-fly position was concluded and revealed that this parasite of cattle spread fairly extensively during the past wet season, but it is satisfactory to report that its wider distribution occurred only in the directions anticipated and nowhere outside the quarantine area.

Brand registrations and transfers have not maintained the increase of the previous year, due probably to the enlistment of many men engaged in the pastoral industry for war service.

Additional registrations by the Veterinary Surgeons' Board numbered 16.

VETERINARY SERVICES.

At the animal health stations at Yeerongpilly and Oonoonbah, satisfactory progress was made in research and general investigational work on diseases in stock during the year. In addition to ordinary ailments and physical conditions encountered in veterinary practice, and on which advice and direction are constantly sought by stockowners, nutrition

problems occupied the attention of veterinary staffs. Details of the year's veterinary services are included among the annexures of this report.

AGRICULTURE.

The year in agriculture was a good one generally. An unusually wet winter succeeded by a good spring in most farming districts justified anticipations of heavy crop production, which, to a large extent, were realised.

Sugar.—The sugar output in Queensland during the 1939 harvesting season was easily an all-time record; 891,000 tons of sugar were manufactured from 6,040,000 tons of cane, as compared with the previous peak (1938), when 777,000 tons were made from 5,342,000 tons of cane.

Notwithstanding the increased quantity of sugar exported, the average value per ton (£15 15s. 3d.) was even greater than that for 1938, and the gross value of the entire crop was over £14,000,000. The enhanced price obtained was due to the fixation of an export price by the British Ministry of Food, at which all available sugar was acquired after the outbreak of hostilities in September, 1939.

The 1939-40 growing season has been reasonably satisfactory, although seasonal adversity was the experience in some areas. The estimated sugar yield for the current harvest is 820,000 tons, about 70,000 tons less than 1939 output. Preliminary milling results indicate that the sugar content of the cane this year is above normal, so that the early estimate may be attained even though the cane yield may be reduced because of the continuance of dry weather in the Central and Southern districts.

Arrangements with the British Government will again assure the sale of the entire production, provided, of course, that shipping is available to transport the sugar to Britain and other units of the British Commonwealth which are this year participating in the Empire buying scheme.

Attention is again directed to the sustained improvement in production efficiency. The average production per acre of $3\frac{1}{2}$ tons of raw sugar is the highest figure yet attained, and is in sharp contrast to the yield of $1\frac{1}{2}$ tons, which was the standard forty years ago. This has only been achieved by the application of scientific agricultural principles, which lead to reduction of waste and costs of agricultural production generally, as well as to the improved milling technique which places the Queensland factories in the forefront of the sugar industries of the world.

Wheat.—For the grain-grower conditions were favourable for high yields, although late frosts of varying severity and a dry period were limiting factors. The aggregate area cropped was 360,459 acres, from which a yield of 6,751,000 bushels was obtained. Over 45 per cent. of the acreage sown was under the five best varieties of Queensland-bred wheat, selected for their rust and drought resistance.

Observation and seed selection plots were established throughout the wheatgrowing areas, from which satisfactory results were obtained. A comprehensive wheat-breeding programme was continued.

Maize.—In the maize-growing districts, crop returns were satisfactory, and many heavy yields were harvested. On the Atherton Tableland, however, cyclonic weather and a prolonged wet season prevented the fulfilment of an early promise of a heavy harvest.

Barley.—Record yields and prices were the satisfactory experiences of barley-growers.

Cotton.—Seasonal conditions generally were not conducive to high cotton yields, and a combination of fiscal uncertainty and the lateness of planting rains caused a steep decline in production. With the renewal of the bounty on raw cotton and the rapid expansion of the home market an intensive campaign to stimulate production is in progress. As a result, a greatly increased acreage can be expected in the coming season.

The merits of growing-cotton under supplementary irrigation were investigated in the course of the year, and results were strongly in favour of irrigation where it can be practised economically.

The value of cotton-grassland rotation was again effectively demonstrated. Further satisfactory progress was made in developing stocks of seed of the most promising varieties, and it is now possible to meet all likely demands for seed of types required by Australian spinners.

Sorghums.—The cultivation of grain sorghums and other fodder crops continues to expand. Seed propagation plots and yields and spacing trials in practically every farming district produced gratifying results.

Tobacco.—The tobacco yield for the whole of the State was a record, and values also were higher than ever before. Approximately 3,000,000 lb. of cured leaf, valued at £340,000, was produced from 4,530 acres, the aggregate area planted.

Investigational work on insect and disease control and cultural practice was continued throughout the year and noteworthy results were achieved.

Peanut.—Conditions favoured peanut-growers who had a satisfactory harvest.

Potato.—Irrigated potato crops were much higher in yield than those in unwatered fields. During one period, market prices were as high as £20 a ton; general average values were fair.

Fodder Conservation.—Interest in fodder storage has increased as an outcome of well-sustained departmental effort.

General.—Investigations bearing on the maintenance of fertility and the economic use of the land resources of the State were continued. Soil erosion, it is recognised, is of the utmost importance to the whole economy of the State. Consequently, soil conservation, has claimed close attention and the extension work of the Department in relation to soil economy has been planned in accordance with recognised principles of effective and protective land utilisation.

FRUIT.

Favourable conditions were general throughout the fruit-growing districts. Yields were heavy and improved prices compensated for losses from climatic causes where they did occur.

Banana-growers now number 2,326, and the planted area aggregates 10,829 acres, of which 8,606 acres are in bearing. The total marketed production for the year was 550,000 cases, an acreage average of 63.

Pineapple-growers also had a good year, with satisfactory returns for fresh fruit and higher prices for cannery consignments.

Tropical fruit culture and vegetable growing are rapidly expanding industries in the coastal regions of the Central Division. Citriculture also is extending in inland districts, especially in the western country.

In the deciduous fruitgrowing districts, production and prices were satisfactory, and marketings compared favourably with those of the previous year. Losses from pests were not serious and fruitfly particularly was less in evidence than usual.

Increasing areas of production and more diversified cropping continue as a characteristic of the fruit industry in Queensland, and its general progress is discussed in an annexed report.

PLANT INDUSTRY RESEARCH.

The activities of the Plant Industry (Research) Division continued as one of the chief bases of the development of the primary industries. A wide range of investigational work was done in relation to the control, by both biological and mechanical means, of insect pests and plant diseases. The services of the Division have been extended to many important problems and to the improvement of technique in relation to those problems. The flow of reliable scientific information from the research worker through the departmental extension services to the producer continued evenly and in appreciable volume throughout the term. The application of the results of investigations has continued systematically and effectively in co-operation with the field officers of the several branches of the Department. It is considered that direct personal contact through the instructional staffs is, when practicable, the best way of conveying the results of research to the farmer. The establishment of experiment and demonstration plots in various districts is another valuable form of extension work which was applied with advantage in the course of the year.

Details of the scope and progress of the research activities of the Department are contained in an annexed report.

THE DAIRY INDUSTRY.

Although dairy production was about 10 per cent. lower than the record output of the previous year, the return of approximately £9,000,000 was only 8 per cent. less.

The Australian championship for butter quality was gained by a Queensland factory for the first time, and the quality of the factory output as a whole maintained at a high standard.

The beneficial influence of the use of steam sterilisation in dairy plants has already become manifest in higher quality production.

The output of butter for the year totalled 139,795,042 lb., of which 72.6 per cent. was exported and 4 per cent. was sold in other States.

The production of cheese, in which there was a marked improvement in quality, totalled 13,841,405 lb.

A new butter-testing laboratory—the third now in operation—was opened at Hamilton, and is a further indication of continued progress in dairy research.

The substitution of a butter improvement service for the standardisation service of former years was another notable advance.

The cheese improvement campaign, by which substantial results have been achieved, was continued.

The regular services of the Department, the scope and value of which are widely acknowledged by the dairy industry, were well maintained throughout the term.

PIG-RAISING.

New and expanding export markets for pig products have opened, and departmental policy has been shaped in accordance with the determination to take full advantage of trade expansion opportunities as they occur.

In comparison with the figures of twenty years ago, pig production has trebled in Queensland. Its present annual value is computed at £1,500,000.

The Queenstate Stud Piggery, established by the Department at the Queensland Agricultural College three years ago, has continued to exert a beneficial influence on the pig industry. The progeny of the foundation stock has been distributed widely within the State under reasonable conditions for farmers as to price and transport. The community boar scheme, through which pedigreed animals are made available for farmers, is already fulfilling the purposes of its foundation.

POULTRY-RAISING.

The poultry industry improved steadily in production and value during the year. The Queensland Egg Board handled approximately 5,300,000 dozen eggs, of which 29.5 per cent. were exported.

WILD LIFE PRESERVATION.

A system of regular patrols is among the measures adopted for the preservation of native fauna and which continue to succeed in their object. Additional sanctuaries, to the number of 18, were proclaimed in the course of the year, while new appointments of honorary protectors totalled 166. The provisions of *The Native Plants Protection Act* also have been rigidly enforced.

CHEMISTRY SERVICES.

There was an increase in the number of samples received for chemical analyses—10,063, as against 9,301 in 1939-40. Soil analyses, pasture nutritional investigations, and poison plant examinations conducted by the chemistry staff were among notable and valuable contributions to a complete year's work.

The administration of legislation relating to the maintenance of purity and quality standards in farm seeds, pest destroyers, fertilizers, stock foods, and veterinary medicines was carried on with customary vigilance.

DEPARTMENTAL PUBLICATIONS.

The Queensland Agricultural Journal, now entering on its forty-fourth year of publication, continued its useful service to the primary industries. Its annual aggregate distribution remains between 112,000 and 113,000 copies. *The Weekly News Bulletin*, now in its fifth year, continues to supply the regular Press service for which it was designed.

Bulletins, pamphlets, and advisory leaflets, consisting mainly of extracts from the Journal and numbering, in the aggregate, approximately 60,000 copies, were made available for general distribution. An additional volume of the *Queensland Agricultural and Pastoral Handbook* was published, and two more volumes will soon be off the press.

The Photographic Section had another busy year, with the demand for photographic prints, lantern slides, and process blocks remaining constant.

Many important additions of technical literature were made to the Central Library in the course of the term.

MARKETING.

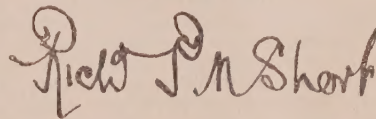
The marketing operations of the commodity boards constituted under "*The Primary Producers' Organisation and Marketing Acts, 1926 to 1939*," are reviewed fully in an annexed report.

ANNEXURES.

Detailed accounts of the work of the Department during the year just ended, in detail, are contained in the report of the Director of Plant Industry (Research); the Director of Agriculture; the Director of Cotton Culture; the Director of Fruit Culture; the Director of Veterinary Services; the Chief Inspector of Stock; the Acting Director of Dairying; the Agricultural Chemist; the Officer in Charge of the Seeds, Fertilizers, Pest Destroyers, Stock Foods, and Veterinary Medicines Investigation Branch; the Editor of Publications; the Director of Marketing; and the Registrar of Co-operative Associations—all of which are incorporated herein.

I am, Sir,

Yours faithfully,



Under Secretary.

REPORT OF THE DIRECTOR OF PLANT INDUSTRY (RESEARCH).

This report reviews the activities of the Division of Plant Industry (Research) for the past twelve months and discusses them along the lines adopted in earlier reports, but the various projects are considered in less detail than previously.

AGRICULTURAL INVESTIGATIONS.

The work of the Agricultural Section of the Division has proceeded more or less along the lines laid down in the previous year, except that irrigation investigations are now included in its programme. Furthermore, the important work of the two officers who are engaged on cotton-breeding activities has assumed still greater importance in view of the fact that cotton is a crop that is in short supply in Australia and increased production is accordingly a wartime necessity. During the last wheat season two-thirds of the acreage sown to that crop in Queensland was devoted to varieties produced by the plant-breeding staff of this Department. The five varieties which topped the list, in respect of sown acreage, were the product of that staff.

BOTANICAL INVESTIGATIONS.

The Botanical Section of the Division functions very largely as an information bureau for the identification of and comment on plants submitted by the public and by departmental officers. Nevertheless, the staff is able to devote some measure of attention to the collection of additional plant specimens and to the description of such of them as belong to unnamed species. This work is, of course, essential in that the accurate identification of plants is frequently required in many applied research projects. Such identification automatically makes available a fund of information accumulated elsewhere in Australia or overseas.

TROPICAL AGRICULTURAL INVESTIGATIONS.

The work of the Bureau of Tropical Agriculture at South Johnstone is concerned mainly with a search for suitable legumes and better grasses for the coastal area north of Townsville, and in this respect its programme can be regarded as definitely promising. Five legumes give indications of being of potential value in the tropical coastal pastures, and, of these, *Stylosanthes guianensis*, or stylo, as designated colloquially, is outstanding. An extensive range of plots of this legume, both in pure stand and in mixture with a number of the more important grasses, are being handled at the Bureau, and palatability, productivity, and persistency tests of the legume have either been completed or are at present under way.

The papaw breeding and genetical work of the State is handled at the Bureau, which also functions as a centre for the maize-breeding programme in the far North. Plant-breeding activities have proceeded along lines similar to those adopted last year, but excessive rain and cyclonic conditions have, to some extent, retarded progress in this work.

The mango investigational work was included in the original programme of the Bureau because South Johnstone was a satisfactory centre for the initial stages of such work. For the field tests necessary in the later stages of the programme it was, however, considered desirable to utilise facilities elsewhere, and the root stock and scion mango field experimental plot has accordingly been established at the Animal Health Station at Oonoonba, where a suitable area of land is available. The varietal field experimental plot is being established at Kamerunga, near Cairns, where a block of several acres of land on the old State farm has been resumed for horticultural field experimental work.

As in the previous year, the officers of the Bureau of Tropical Agriculture have maintained the closest association with the Atherton Tableland problems and with the programme of work carried out in association with the Tableland Experiments Committee.

ENTOMOLOGICAL INVESTIGATIONS.

The entomological project which has undoubtedly attracted most public attention during the last twelve months has been the distribution of the lantana leaf bug. This insect is now thoroughly established in a large portion of the lantana infested country north of Townsville. It has been widely distributed by officers of this Department, but it has undoubtedly spread considerable distances of its own accord. During the winter, complete defoliation of infested bushes occurred very extensively and there is every indication that, if the present position is maintained, the lantana leaf bug will be an important feature in the control of lantana in the far north. Distribution south of Townsville has not been on such an extensive scale, and it is too early to attempt to assess its potential value other than in the Far North. The outlook for the colony established in the vicinity of Rockhampton some time ago is now brighter than it was last year.

The fruit fly luring work has again featured largely in the entomological programme in Southern Queensland, and there are indications that markedly improved lures may be available in the near future.

HORTICULTURAL INVESTIGATIONS.

The work of the Horticultural Section consists predominantly of a number of long range problems, and it is accordingly impracticable to furnish early results, except in connection with certain aspects of these projects. The work is progressing very satisfactorily, and it is hoped that a solution of a number of fundamental problems will eventually be of very material assistance to the fruitgrowers of this State. One of the projects on which early results are likely to be available is the investigation of the fertilizer requirements of the bean crop, which is now such an important source of income in many coastal areas between Brisbane and Gympie.

One development in the Horticultural Section's programme which is probable in the near future is the inclusion of experimental work with essential drug plants, work on which is justified by the prevailing war conditions. Preliminary arrangements have already been made for such work to be undertaken at the Bureau of Tropical Agriculture at South Johnstone, and somewhat similar arrangements are under discussion for the Maroochy Shire. Work on drug plants at both centres will be done at the request of and in co-operation with the Council for Scientific and Industrial Research.

PLANT PATHOLOGICAL INVESTIGATIONS.

The work of the Plant Pathological Section has proceeded satisfactorily along the lines laid down in earlier years. More time is being devoted to legume inoculation investigations and to the supply of inoculation cultures to farmers throughout the State. The investigation of the fused needle problem which has been of such interest and importance to the Forestry Sub-Department during recent years has been completed. This problem seems to have been satisfactorily solved, and the treatments recommended are being applied on a very extensive scale by the Sub-Department.

PLANT PHYSIOLOGY INVESTIGATIONS.

Since the establishment of the Division of Plant Industry (Research) the programme of the Plant Physiology Section has concerned itself principally with the investigation of pineapple problems, but, as indicated in last year's report, the scope of that section has now been appreciably widened. A stage had earlier been reached when it was considered desirable to assemble all the information that had been obtained on pineapples during recent years, and to make it available to the growers by means of a comprehensive series of articles. These are now appearing in the *Queensland Agricultural Journal*.

A point of interest and of considerable potential importance which emerged during the recent experimental work on pineapples is the possibility of utilizing small soil applications of copper. This possibility is being actively investigated.

SOIL BACTERIOLOGIST'S INVESTIGATIONS.

The Soil Bacteriologist has again confined his activities to problems on the Atherton Tableland, and he is participating extensively in the programme of work carried out in association with the Tableland Experiments Committee. He has devoted considerable time to soil survey work and also is actively engaged on certain legume inoculation problems. One of the most important projects of the Atherton Tableland experimental programme is the search for a suitable legume or legumes for the dairying districts. Endeavours to establish such a legume have been made in the past by enterprising farmers, but the results as a whole have been disappointing. It was felt, however, that such past failures should not be accepted as conclusive, because the attempts at legume establishment were confined to a relatively small number of species. Legume introduction work has accordingly been given a prominent place in the programme, and close on 400 species, varieties, and strains of legumes are at present under test in the departmental experimental plot near Malanda. Supplies of seed of many of these legumes were obtained through the plant introduction service of the Council for Scientific and Industrial Research, which co-operated in this and in other directions during the past twelve months. Other State Departments also assisted by making seed and planting material available.

ROBERT VEITCH,

Director of Plant Industry (Research).

(1) REPORT OF THE AGRICULTURAL SECTION.

The programme of investigations designed by the Agricultural Section of the Division of Plant Industry (Research), which is reviewed in this report, consists mostly of a continuation or amplification of the operations commented upon in the report of the previous season.

PLANT BREEDING.

Wheat.—A comprehensive programme of wheat-breeding operations was again conducted. Unfortunately, heavy rain storms ruined the main breeding plot at Kincora in the Eastern Darling Downs, which necessitated confining the selection of material for future trials to the observation plots at Roma. Dry conditions prevailed through most of the season at the latter centre, thus preventing any indications being obtained of the relative rust resistance of the material under observation. The conditions were of value, however, in testing the ability of the strains under trial, to resist very dry weather and the opportunity was taken to make selections on the basis of this factor, and also on the quality of the grain. Similar conditions to those ruling at Roma were experienced at the Biloela Research Station, where confirmatory evidence was obtained in some instances of the results secured at Roma.

The investigations relating to mottling of grain or yellow berry were severely handicapped by the seasonal conditions, grain of good quality being produced at Roma while at Kincora the experiment was destroyed. Likewise, negative results were obtained in the investigations relating to the revitalising of varieties by artificially pollinating flowers with mixed pollen collected from a large number of flowers of the same variety.

Supplies of pure seed of several varieties were propagated during the season.

Barley.—The cross-breeding programme in this crop has not yet reached a stage where any definite results can be reported.

Oats.—The programme of improvement of this crop was adversely affected by the dry climatic conditions experienced at the centre where the cross-pollination operations were conducted, so that only a limited amount of satisfactory material was obtained for further study.

Field Pea.—The possibility of evolving a suitable drought resistant variety of field pea with satisfactory culinary qualities was further studied. Sufficient purification has been effected in one of the promising selections to warrant the establishment of a seed increase plot.

Cowpea.—The 1938 cowpea crosses for nematode resistance were sown at Roma, and seed was obtained for an extension of this investigation during the coming season. An endeavour was made to hybridize the native species, *Vigna lanceolata*, with some of the smaller seeded cultivated varieties, to incorporate the drought resistance of the former with the heavier productivity of the latter. As part of this programme, seed of a comprehensive range of promising individual plants of the former species was collected for establishment in nursery plots.

Cotton.—Satisfactory progress was made in developing superior strains of several of the cotton varieties in which improvement is being conducted. Selection work was carried out, with the co-operation of various officers of the Agricultural Branch, in eight of the older established varieties at a total of sixteen centres and in two of the newer introduced varieties which have shown promise in their preliminary trials during the last two seasons.

Owing to the number of more recently introduced varieties being investigated in the southern district, only a breeding block of Oklahoma Triumph progenies was conducted in this area. Several strains in it gave very satisfactory results and it would appear that definite progress is being made in developing high yielding types with larger bolls than the average of the bulk stock of this variety. Selection work was started in Farm Relief 5 and Qualla, two of the newer imported varieties which have done well in the two years of their trial in this country.

Work was continued in the breeding centres of the Miller, Half and Half and New Mexico Acala varieties established in the South Burnett district. Adverse conditions severely affected the results in the first two varieties but very satisfactory progress was accomplished in the New Mexico Acala. This variety gives promise of eventually becoming the leading staple cotton.

The main breeding centre for the Oklahoma Triumph variety is located in the Central Burnett, where it may supplant all other varieties for the fertile soils of the alluvials

and lower forest slopes. Very good progress has been made at this centre in developing out of this variety heavy yielding strains which produce bolls appreciably larger than the average of the variety. Two strains are available for propagation and subsequent testing. A severe storm washed out the main breeding area of the Lone Star variety, which necessitated complete replanting of all progenies, thus causing a very late developed crop that mostly produced light yields. Much of the work will, therefore, have to be repeated in the coming season. Good progress was made, however, in the breeding block of the Lot 34 strain of Lone Star, which was given a pre-planting watering to enable an early planting to be effected. Several very good sub-strains are now available in this strain of Lone Star for multiplication for commercial distribution.

Breeding work in the Upper Burnett was confined to further purification of the stocks of the original selections from natural hybrids between the U.4 and Miller varieties, which appeared to be jassid resistant. One progeny showed a high degree of resistance to jassid and will be increased and tested in the main jassid infested cotton growing areas. Breeding work was also started in Stoneville, a new long staple variety that yielded satisfactorily in the Upper Burnett and southern districts this season.

The breeding work in the main centres of the Miller, New Boykin and Indio Acala varieties in the Central district was severely handicapped by the adverse climatic conditions. It will, therefore, be necessary to repeat much of the trial of these varieties during the coming season. A few strains in the Miller and New Boykin varieties gave satisfactory results, which, considering the seasonal conditions, would indicate that some progress was made in developing superior types of these extensively grown varieties.

Promising results have been obtained in the programme outlined in the previous report, for developing a jassid resistant variety of cotton for the Callide Valley. Three progenies selected from the Miller variety, which were located at this centre showed very satisfactory uniformity of plant type and resistance to jassid. These have been bulked separately for further increase and testing. Many re-selections from these progenies and other strains were obtained, together with new apparently resistant selections from jassid infested crops of this variety. Progenies of plants selected in the New Boykin variety last season, which appeared to be resistant to jassid, failed to show resistance this season. Accordingly these strains have been hybridized with a jassid resistant variety which is not otherwise suitable for Queensland conditions, with a view to incorporating jassid resistance in the New Boykin variety, which is a very suitable cotton for certain alluvial soils in this district. Satisfactory progress was made in the section of the programme dealing with the hybridization project between the jassid resistant U.4 variety and Miller, the variety most extensively grown in this State.

TOBACCO.

The major tobacco seedbed investigation undertaken was for the control of yellow patch of tobacco seedlings. It clearly indicated that this condition is a physiological disease associated with the use of excessive quantities of organic nitrogen, and can be avoided by using only nitrate of soda as nitrogen in seedbed fertilizers. Investigations on methods of sterilizing seedbed soil for the control of nematodes, both by heat and by chemicals, indicated that the procedure at present employed was not improved upon by any of the other methods used. Spraying experiments for the control of blue mould with various fungicides and spreading agents delayed the advent of the disease, but it was not possible to observe any differences in the efficiency of the materials tested. A field experiment for the control of nematodes by cultural methods failed to give definite results at Mareeba.

Fertilizer formula experiments indicated that at Mareeba the yield was significantly greater with an application of 40 or 50 lb. of nitrogen per acre than with 30 lb., and that the value of leaf was significantly greater with 40 lb. than with 30 lb. of nitrogen. The best yield was obtained with a ratio of 40-80-60 lb. and the best return with a ratio of 40-100-40 lb. of nitrogen, phosphoric acid and potash respectively per acre. At Dimbulah a similar experiment did not give significant results but the best yield was obtained with a 30-100-60 lb. ratio and the best value with a 30-80-60 lb. ratio.

An accessory elements fertilizer experiment at Dimbulah did not show significant differences between treatments. However, the worst result was obtained with the standard fertilizer, and the best with the addition of potash and magnesia to the standard fertilizer.

A variety experiment at Mareeba was too irregular to give significant results. Another at Mackay was a partial failure but an examination of cured leaf suggested that the best quality was produced by Cash, Virginia Bright Leaf and Gold Dollar. At Dimbulah it was found that the yield of Cash significantly exceeded that of Warne or Virginia Bright Leaf, whereas the value per acre of both Virginia Bright Leaf and Cash significantly exceeded that of Warne. Differences associated with insect control methods were not significant.

At Dimbulah the value of leaf was significantly greater and the yield was almost significantly greater when an American method of plough cultivation was employed. Plants spaced either 16 in. or 21 in. in the rows gave significantly better yields and values than when set 24 in. apart as is the usual procedure.

A two year rotation experiment initiated at Mareeba during 1937-38 suggested that tobacco following cowpea gave the worst result and tobacco after tobacco the best. A better result was obtained with 500 lb. of 2-15-4 fertilizer than with 700 lb. of 4-10-6 fertilizer per acre.

Tobacco varieties and hybrids in a nematode resistance trial at Mareeba partially failed owing to blue mould, but seed of the most promising selections was collected for further trial. Preliminary observations on nematode resistance at the Bureau of Tropical Agriculture suggested that both White Honduras and the strain Wyemo were promising.

Soil erosion control demonstrations at Mareeba and Dimbulah, as in past seasons, gave fairly satisfactory results.

Nine plots were established in the Central district for the propagation of tobacco seed together with a selection plot for maintaining tobacco strains. At the Queensland Agricultural High School and College a reserve seed plot of all varieties also was established.

SORGHUMS.

A comprehensive programme of investigations in sorghums has again been carried out at the Biloela Research Station.

At that centre the more recently introduced grain sorghums which showed promise in the observational trials conducted there last season, were compared with the best of the older established varieties in varietal tests. Ajax, Kalo, Wheatland Milo and Quadroon, in the order named, significantly outyielded all the other varieties in the test in regard to moisture free grain produced. Unfortunately Ajax, which is a newly introduced variety, produces a very tightly compacted head that may suffer severe damage by insect attack. It will, therefore, be advisable to develop a strain of it with a head of a more open type before further testing of the merits of this otherwise promising early maturing variety. Kalo, which was not significantly outyielded by Ajax in grain production, was definitely superior to both Ajax and Wheatland Milo in regard to the yield produced of both green stover and fodder. Quadroon, a Milo-Kafir hybrid recently introduced, gives promise of becoming a useful grain-sorghum when it has been thoroughly acclimatized.

The merits of the Kalo, Wheatland Milo and Hegari varieties of grain sorghum were tested against the Star Leaming maize which is the standard variety for the Research Station and once again the grain sorghums definitely outyielded maize, the relative value being in the order in which the varieties are stated.

Twenty-four varieties of sorgos, or sweet sorghums, were tested at the Research Station, being divided into short and long season types. In the former type, Jones substantially outyielded the eight other varieties in the test and compared very favourably with the leading varieties of the long seasonal type. In the latter type, White African, Sugar Drip, Atlas Q.1085 and Atlas Q.1642 led in the order named with very little difference between them.

Observational trials were conducted at several centres by officers of the Agricultural Branch, of the most promising of the newly introduced varieties of grain sorghums and sorghos tried out at the Biloela Research Station in the previous season. Several of these varieties appear to be well worth comparing with the leading older established varieties to ascertain their merits in the different parts of the State where sorghums can be satisfactorily grown.

PASTURES.

The original plan for blue couch pasture improvement experiments at Dayboro could not be carried out in its entirety because certain seed required was unprocureable owing to war conditions. Rested plots show a marked increase in the amount of a naturalised prostrate legume, *Desmodium triflorum*, and of sedges, but the grass has not shown any benefit from spelling. Ploughing the grass and resting, with the object of improving either the blue couch grass or the paspalum was not successful, a dense stand of weeds developing.

A wide range of winter-growing legumes was established in the pasture legume trial at Dayboro, and some interesting preliminary information was obtained therefrom.

The paspalum renovation experiment commenced at West Cooroy in January, 1939, received a severe setback, due to the subnormal rainfall, the deficiency for the period September to February inclusive amounting to 50 per cent. of the normal precipitation. The plots ploughed in 1939 were unable to thicken up satisfactorily, and the white clover sown in the autumn of 1939 was practically eliminated by the end of that year. It was possible to make only one mowing of the areas early in December, and another in early March, and while irregularity of stand and adverse weather conditions robbed the yields produced of much of their reliability, indications were obtained that significant responses to ploughing and to applications of superphosphate were realised.

Dry weather conditions at Cooroy eliminated in the spring most of the species included in the pasture legume trial, and this experimental area was ploughed out. A rotation was planned to free it of weeds, the first phase being a cowpea variety test. This provided a fair bulk of green manure for ploughing under in March, and a mixture of Italian rye grass and red clover was sown in April.

The carpet grass problem is becoming increasingly important in paspalum areas in the near North Coast districts. Ploughing out of the grass and cropping the area for a period appears to be the best method of dealing with the weed on cultivable land. In an endeavour to ascertain whether a single ploughing, followed by the sowing of pasture grasses and legumes and the application of fertilizers, would improve the pasture, a series of plots embodying such treatments was laid down at Palmwoods. Of the species sown, paspalum and Townsville lucerne (*Stylosanthes sundaica*) established satisfactorily. This trial is in its early stages and no comment can be made at present.

Preliminary field tests having suggested that the failure of white clover on yellow clay soils of the Cooroy district may be due to phosphate fixation by the soils, pot tests were initiated in Brisbane and are still in progress.

The strip pasture or "cafeteria" trial at Graceville, planted early in 1939, made a good recovery during the past summer, and both of the original paddocks are now satisfactory. A third paddock was planted by the owner on similar lines to those in the trials. Whilst little information is as yet available regarding the effect of the availability of strip pastures on milk production, the trial has yielded information concerning the suitability of various grasses for Brisbane conditions. Molasses grass, hitherto regarded as suited only to wet tropical conditions, has performed very satisfactorily in the strip pasture trial. Para grass and elephant grass also yielded promising results.

The experiment in pasture furrowing established at the Biloela Research Station last season was continued along the same lines this season. The dry conditions during the first half of the season placed a big premium on moisture trapping methods, and the areas in which streak furrows were spaced four feet apart yielded by the end of January, an increase of 100 per cent. over either mould-board ploughed furrows spaced approximately twenty feet apart or the control plots. Following this cutting, heavy rains were experienced in February and March which promoted good re-growth on all treatments and reduced the value of the streak furrows for the early April cutting. A total gain for the two cuttings of slightly over a half ton of air-dried hay per acre was obtained in favour of the streak furrows over either of the other two treatments.

Two pasture furrowing experiments testing the value of the "make-and-break" type of furrows were established in the Blackall district during the season. In the one on the ashy grey clay downs soils no visible effects were obtained from pasture furrowing, the crowns of the furrows flattening out with the first good rains. On the harder chocolate soil, however, furrowing produced most marked effects along the furrows in regard to the striking increase in the size and number of plants, such as *Bassias*, which were originally dominant on the slope before furrowing. Another very important effect was the change in the botanical composition of the strips along the furrows, *Psoralea cinerea*, a valuable leguminous plant, becoming prominent following eleven inches of rain in February. Soil moisture studies also indicated that in some cases an increase in moisture penetration of at least 3 feet was obtained in the furrows.

The testing of the value of sowing Rhodes grass in strips five feet wide separated by cultivated areas four feet wide was continued at the Biloela Research Station. Unfortunately the data of the final cut have not been finalised in time for inclusion in this report, and comment on the season's results must be deferred.

The investigations relating to the effects of resting native pastures in the Blackall district were continued under conditions of excellent rainfall. There was a big increase in the rested areas in the size of herbs, particularly those which are readily eaten by sheep, and some increase in the population of Mitchell grasses. At the end of the season two of the rested areas were well covered with grass, but the third continued to be dominated by pioneer herbs, such as *Bassias*, *Malvastrum*, and *Salsola*, although there was an appreciable increase in the stand of Mitchell grasses.

Much country is being ring-barked in Central Western Queensland to improve its carrying capacity. A number of newly ring-barked areas were therefore surveyed during the season to obtain basic data for use in comparing any changes in plant population and species occurring in subsequent years, and thus allow of an evaluation being made of the merits of this practice.

Further investigation of poisoning of sheep by plants was conducted during the season, *Swainsona luteola* being suspected in one case. A report on the occurrence of *Gastrolobium grandiflorum* and its relationship to poisoning of sheep was prepared at the request of the Poison Plants Committee.

(2) REPORT OF THE BOTANICAL SECTION.

The Botanical Section is largely an advisory one, and as in previous years, correspondence with farmers, pastoralists, etc., took up a large percentage of its time. The major portion of such correspondence dealt with plants sent in for identification and report on their properties, useful or otherwise.

VISIT TO ROYAL BOTANIC GARDENS, KEW.

As mentioned in last year's report, the Government Botanist was engaged for portion of the year as Australian Liaison Officer at the Royal Botanic Gardens, Kew, the period spent at that institution being from March 7th to October 11th.

Photographing type sheets and copying illustrations and descriptions of Australian plants in rare works in the library, the inspection of living collections, and the arrangement of Australian specimens brought over occupied this period.

The basic idea of appointing a Liaison Officer to Kew was to facilitate co-operation in botanical matters between the Royal Botanic Gardens and Australia. That institution is the chief centre of research in systematic botany in the world, and close co-operation between Kew and the Dominions is therefore highly desirable. The big advantage to Australian botanists working at Kew is that it is a model of efficiency, and experience gained there must be of considerable use to any overseas botanist.

POISON PLANTS.

A number of letters were received, together with specimens of plants suspected of poisoning stock. These cases have all been brought up before the Poison Plants Committee, and, where deemed necessary, investigated. The Botanist visited St. George during April, to investigate very severe losses in travelling sheep which had occurred in Boombah Lane. An abundance of Native Couch (*Brachyachne convergens*) was found in the Lane, which was strongly suspected of being cyanogenetic. Specimens were brought back to Brisbane for testing by the Agricultural Chemist, and showed the HCN

A block of Rhodes grass strains supplied by the Council for Scientific and Industrial Research was established during the summer on a farm at Dayboro and at the Biloela Research Station. The habits of growth and reactions of these strains to grazing conditions will be studied over a period of years.

The small area reserved for pasture species at the Moggill Reservation has been kept filled, mainly with introduced species. Giant white clover (*Trifolium repens*, var. *giganteum*) showed considerable promise, but was recently found to be very heavily infested with nematodes, a fact which may limit its value as a pasture species.

BIOMETRICS.

The volume of investigations conducted during the past twelve months by officers of the Department of Agriculture and Stock has once more increased appreciably. The design of most of these investigations and the analyses of the data obtained from them have created a continuous demand on the services of the biometrical section. Altogether one hundred and fifty-four experiments involving six hundred and twenty-one complete analyses, as well as voluminous computation of data, which in two experiments totalled about four weeks' work, were handled.

W. G. WELLS,

Director of Cotton Culture and Senior Research Officer
(Agricultural Section).

content to be well above the danger mark. Further supplies were obtained for a chemical investigation of the glucoside at the University of Queensland. An article on Couch Grasses, poisonous and otherwise, is being prepared.

HERBARIUM.

A commencement has been made with the work of remodelling the herbarium, where possible, by mounting specimens, and arranging them according to the system employed at the Royal Botanic Gardens, Kew. This work will naturally extend over a very considerable period.

The grass herbarium and the Chenopodiaceae are being re-arranged.

A certain amount of work has been done on the Exotic Herbarium, and it is hoped that much exotic material, which is now in bundles, and which was received on an exchange basis, will soon be incorporated on the shelving. Much valuable material has been received during the year from Mr. O. Degener, Hawaii, from Dr. B. A. Krukoff of the New York Botanical Garden, and from the Royal Botanic Gardens, Kew. Indebtedness must also be expressed to Mr. H. Tryon for the donation of his herbarium of Australian plants.

BOTANIC MUSEUM.

Additions to the Botanic Museum have not been very numerous during the year, but it has been maintained in good order.

RESEARCH WORK ON HAND.

There is on hand at the present time a "Contribution to the Queensland Flora No. 7," largely based on work done at Kew. At the request of the Director of the Arnold Arboretum, a paper is also being prepared for publication on the Myrtaceae of the three Archbold Expeditions to Papua and Dutch New Guinea.

C. T. WHITE,
Government Botanist.

(3) REPORT OF THE BUREAU OF TROPICAL AGRICULTURE.

Activities at the Bureau of Tropical Agriculture have centred chiefly on the solution of problems connected with grassland development.

Practical information is required by the coastal farming community of North Queensland to enable it to undertake a more diversified form of farming than that at present pursued and to obtain this information, experiments have accordingly been laid down in various areas of North Queensland on different soil types.

GRASSLAND EXPERIMENTS AT THE BUREAU.

Numerous legumes have been tested during the year under review for possible use as pasture legumes and several promising types have been selected; these include *Stylosanthes guianensis* (stylo), *Stylosanthes guianensis* var. *sub-viscosus* (hairy stylo), *Calopogonium mucunoides*, *Centrosema pubescens*, and *Pueraria phaseoloides*. Many temperate legumes were experimented with, including numerous clover and lucerne strains and species of lespedeza and beans but without success;

several tropical legumes, by which grasses grew well and seeded freely. The qualitative examination of these legumes was followed by quantitative tests, in the form of a replicated experiment, of the reaction of selected types to varying levels of lime and superphosphate, alone and in combination.

A productivity experiment with promising grasses was commenced in April, and grazing trials on different grass and stylo mixtures, grass and other legume mixtures and Rhodes grass in pure stand are in progress. Another aspect of grassland farming is being investigated in a fertilizer experiment with various promising grasses.

GRASSLAND EXPERIMENTS AT OUTSIDE CENTRES.

It is the policy of the Bureau to assist the farming community in the North by the laying down of experiments on various farms, each representative of a particular soil type; the initial experimental work at the Bureau is thus continued and expanded at appropriate centres elsewhere in North Queensland. These experiments form part of a long-range plan to explore fully the inherent possibilities for intensive

grassland development possessed by certain areas of North Queensland. During the year, two experiments were planted at outside centres, one at Innisfail and one at Millaa Millaa. Interesting results have been obtained from each experiment.

FODDERS.

A satisfactory crop of maize was harvested at the Bureau, but the prolonged wet season made the planting of further maize inadvisable, and as an alternative, a trial has been planned with certain varieties of sorghum. An experiment with white panicum resulted in three cuts being obtained and harvested. Yield figures indicate the value of a fertilizer application of superphosphate up to 3cwt. per acre.

FIBRE PLANTS.

The possibility of using certain plants for fibre production has received attention during the year, and at the request of the Council for Scientific and Industrial Research, samples of the pink burr, *Urena lobata*, have been forwarded to Canberra for fibre experiments.

COTTON.

A varietal trial comprising Half and Half, Miller, Boykin, Okra Acala, and D.P.L. No. 145 was laid down at the Bureau but the yields obtained were unsatisfactory; a further trial with fourteen varieties was planted in late May of this year.

LANTANA LEAF BUG.

Following the receipt of many enquiries, numerous colonies of the lantana leaf bug have been distributed by the Bureau, and it is satisfactory to report that this useful insect is spreading rapidly on the coast north of Townsville and on the Cairns hinterland.

AGRICULTURAL RESEARCH ON THE ATHERTON TABLELAND.

Close touch has been maintained with field experimental work on the Atherton Tableland and all meetings of the Tableland Experiments Committee have been attended.

PLANT BREEDING.

Work on the genetics of maize and papaw has continued during the year. Clonal strains of Guinea grass have been planted out for observation on productivity and reaction to various cutting treatments. Plots of *Stylosanthes guianensis*, including the variety *sub-viscosus* were laid down for preliminary studies on these promising pasture legumes.

CHEMICAL INVESTIGATIONS.

Analyses of numerous grass samples collected from the experimental paddocks at Tully were completed. Soil samples from South Johnstone and from outside experiments were collected and analysed, and an investigation on the effect of selected perennial legumes on soil fertility was commenced. During the year, analyses of certain grasses and legumes from the experimental plots at the Bureau were undertaken.

HORTICULTURAL INVESTIGATIONS.

Work on the asexual propagation of the mango has continued and an experimental plot has been planted at the Animal Health Station at Oonoonba. During the year it was decided to transfer the mango and citrus experimental work from South Johnstone to Kamerunga, and accordingly these investigations are now concentrated at the latter centre.

J. LEEMING SCHOFIELD,
Director, Bureau of Tropical Agriculture.

(4) REPORT OF THE ENTOMOLOGICAL SECTION.

The research programme for the year was carried out more or less as planned at all field stations, other than Toowoomba. At Toowoomba advisory and related duties became of major importance in mid-summer when locusts were active on the Darling Downs and research work had perforce to be more or less suspended for some months.

DECIDUOUS FRUIT PESTS.

A new codling moth advisory service was introduced in 1939. Previous experimental work has established the fact that improved control of this insect can be obtained if sprays are applied shortly after peaks of moth activity, which can be conveniently determined by lure traps at key points throughout the district. The lure used contained wine and water in the proportions 1:9. With grower co-operation in servicing these traps, continuous records of moth activity were kept. At appropriate times spray-date recommendations were issued to growers by wireless broadcast, through the press and by notices at focal points of community interest. This service meets a very pressing need.

Demonstration plots established at The Summit included a number of non-arsenical codling moth sprays which earlier experimental work has shown to be quite adequate substitutes for lead arsenate cover spray applications. The plots all received a lead arsenate calyx spray, but cover sprays were exclusively white oil or white oil and nicotine sulphate mixtures. Spray applications were timed by lure-trap records and yields were determined from eight sample trees in each plot. Yields conformed with expectations. In practice a grower's choice of a cover spray now depends less on the codling moth position than on the status of other pests, such as red mites, aphids, apple leaf hoppers, and scale insects in his orchard. A field day was held in February in the orchard in which these demonstration plots were established.

Bentonite-nicotine received some prominence as a codling moth cover spray some years ago but, though toxic to the larvae, the residue problem nullified any practical utility it might otherwise have had. However, a similar product free from any important residue handicap is now available. In an experiment on Granny Smith apples, this insecticide proved satisfactory when used with a small quantity of white oil.

The Queensland fruit fly, *Strumeta tryoni* Frogg., was of minor importance in the Stanthorpe district this year and projected bait spray control tests accordingly had to be abandoned. In the autumn of the previous season a number of cages situated in sheltered areas were charged with fruit fly infested fruit in order to further investigate the possibility of larvae, pupae, or adults surviving the winter. Ninety per cent. of the pupae yielded adults in late autumn or early winter, none of which survived until spring; the remaining pupae together with any larvae present at the onset of cold weather died. The accumulated evidence over a period of

years is now such that migration from outside sources must be postulated as the only possible explanation of spring outbreaks in stone fruits.

PESTS OF TROPICAL AND SUB-TROPICAL FRUITS.

An adequate summer spray for the control of the bronze orange bug, *Rhoecocoris sulciiventris* Stal., would unquestionably be useful and derris and pyrethrum were therefore tested as insecticides for use in bronze orange bug control. Surprisingly good kills were obtained with sprays containing high concentrations of derris, but even so some stages, e.g., adults, were much more susceptible to the treatment than others, e.g., fourth stage nymphs. In a mixed population such as that present in summer, sprays of any kind which act differently on the several stages of the bug can do little more than relieve the position. Present recommendations for the control of the pest prescribe autumn applications of a resin-caustic soda-fish oil spray, which is applied in place of the scalecide normally used at that time of the year. If derris is effective against the second stage nymphs then present on the tree, it may be feasible for growers to simply add the necessary amount of derris to the scalecide normally preferred. Experiments have, therefore, been initiated to determine the merits and safety of such combination sprays for bronze orange bug and scale pest control purposes.

Measures recommended for the control of the Queensland fruit fly, *Strumeta tryoni* Frogg., in citrus orchards include the destruction of stung fruit and luring supplemented, where necessary, by the use of bait sprays. Both the lures and bait sprays are doubtless amenable to improvement, but suitable experimental methods essential to any such work are very difficult to formulate. Lures can, however, be compared much more rapidly than bait sprays and work on this subject, initiated in 1938-39, has been intensified in coastal areas where citrus is grown. So far the evidence suggests that vanilla makes little or no contribution to the efficiency of lures containing ammonia. On the other hand, certain materials have appreciably increased the number of flies caught in orchard traps. It may be practicable to revise official lure recommendations in the near future, but more information is urgently required on the chemical changes taking place in these empirically devised lures. The contribution of more efficient lures to the control problem cannot be determined in a single experiment or even in a single season for the influence of any lure or lures on the yield of sound fruit from an orchard is difficult to assess experimentally.

For some years past the control of citrus scale insects has been somewhat involved. The problem was complicated not only by the species complex, but also by the fact that pest and disease control measures could be merged into a single spray programme only with difficulty. The recent development of cuprous oxide as a fungicide has now made possible a reconciliation of entomological and pathological interests.

Home-made cuprous oxide in particular is rapidly displacing Bordeaux for use on citrus, and it can be used satisfactorily with certain insecticides. It is now feasible to design spray schedules for the more important citrus districts which will meet all normal pest and disease requirements. These schedules are at present being drawn up in collaboration with officers of the Plant Pathological Section.

The banana rust thrips, *Scirtothrips signipennis* Bagn., which last year increased both its range and importance as a banana pest, caused little loss to the industry though individual growers have suffered severely. Since the major outbreak in 1931-33, this insect has declined in numbers, a phenomenon which is not peculiar to Southern Queensland, but is true right through the State even though populations are invariably higher in the far north. The need for substitute covers to take the place of hessian bags or tubes has been accentuated by wartime conditions, supplies of hessian being both scarce and expensive. Field tests have shown satisfactory results by double bagging with good quality brown paper, i.e., covering the bunches with two bags which fit loosely one inside the other. Probably as a result of their greater pliability these double covers tear less easily than single tubes or bags and should meet all reasonable rust thrips control requirements at a cost which is within the compass of the grower.

The well-known phenomenon of varietal resistance or susceptibility to various diseases is apparently paralleled in the banana by resistance to insect pests. Cavendish, the most important variety grown in the State, though susceptible to banana rust thrips is not attacked by the Chrysomelid, *Rhyparida morosa* Jac., in North Queensland. Ducasse, a non-commercial variety grown on a small scale in both North and South Queensland, is apparently resistant to banana rust thrips though highly susceptible to *Rhyparida*. The observation may be important should the necessity ever arise to breed banana varieties carrying some resistance to insect pests.

A second colony of the banana weevil borer predator, *Dactylosternum hydrophiloides* McL., was supplied by the Commonwealth Council for Scientific and Industrial Research. After being received from the Malay States and undergoing the usual quarantine precautions, the colony was split into two parts, one of which was released at Beenleigh, and the other at Yandina on the North Coast. Reproduction has taken place at both centres. As at Tallebudgera, where a colony was released last year, dispersal is in progress, and the insect can now be considered thoroughly established, but it will necessarily be some time before its influence on the weevil population can be estimated.

MARKET GARDEN AND VEGETABLE PESTS.

The difficulty of coping with outbreaks of insect pests in the strawberry crop has focussed attention on the possibility of runner selection and runner treatment as methods of minimising losses. Work of this kind at Nambour indicated that yields from runners selected for their freedom from pests and diseases were higher than from runners collected indiscriminately. Runner treatment with nicotine sulphate or hot water effected no improvement, but this may have been due to the fact that pests, the most important being the strawberry thrips, *Neophysopus fragariae* Gir., were not particularly active during the season. By the time obvious symptoms of thrips attack are apparent in the field much of the fruit is already blemished. Control measures systematically used from then on may protect fruit subsequently formed, but much of the fruit already set must necessarily be discarded as it matures. If precautionary measures at pre-planting and planting periods prove to be effective, losses of this kind should be appreciably reduced.

Insecticidal experiments for the control of tomato pests in the Central district were terminated prematurely by the disastrous effect on the plants of severe hail. Sufficient pickings, had, however, been made to supply data for analyses. The principal conclusions are (a) that dusting is preferable to spraying even though it decreases egg parasitism in the corn ear worm moth, *Heliothis obsoleta* F., (b) that crops must be treated at least every three weeks after flowering commences. Under good growing conditions fortnightly treatments may be necessary, and in any case crops should always be treated after rain.

PESTS OF FODDER CROPS AND CEREALS.

The Australian plague locust, *Chortoicetes terminifera* Walk., required attention this year in the most intensive outbreak on record in the State. Hopper swarms appeared at Miles in September without causing appreciable damage. In late November and early December, flier swarms appeared in dense numbers in the Darling Downs and other subcoastal areas as far north as Theodore. The main invasion came across the New South Wales—Queensland border in the vicinity of Texas, but these insects were doubtless supplemented on the Downs by adults bred in Queensland. Egglaying in the important agricultural areas was very extensive, eggbeds being used time and again by successive swarms of adults. Hatching

took place in late December and January and fodder crops suffered. Adults from this generation then left the areas on which they developed, and, apart from a small amount of egg-laying on the outskirts of the Downs which caused little damage, the outbreak terminated as sharply as it had commenced.

Control operations followed earlier precedents, an arsenic pentoxide-bran bait being used extensively. Funds were made available by the Crown to the Shire Councils either as loan subsidies or as subsidies equal to half the cost of control operations.

In conjunction with the Commonwealth Council for Scientific and Industrial Research, a locust information service has been inaugurated, stock inspectors in all parts of the State being utilised as observers. They report monthly on locust activities in the swarm phase in their several districts. The information made available in these reports has already proved valuable both in control and research activities, for it unquestionably pools observations which shed a great deal of light on locust behaviour.

The increase in grain sorghum production has focussed attention on pests of this crop. They are many and their importance varies from district to district. On the Darling Downs the sorghum midge, *Contarinia sorghicola* Coq., is very destructive, and is found in association with the aphid, *Aphis maidis* Fitch. In the Central district these two pests are linked with various Lepidoptera, chief among which are the peach moth, *Dichocrocis punctiferalis* Gn., and a Phycitid, *Homoeosoma* sp., probably *H. vagella* Zell. In all districts the corn ear worm, *Heliothis obsoleta* F., commonly attacks the heads. The importance of the moth pests decreases away from the coast, and they should not be of major importance in districts where grain sorghum production is most likely to expand. Sorghum midge seems to thrive in most areas, and some attention has been given to this insect in survey work in the Central district and on the Darling Downs. Damage seems to be linked with two factors, namely, the period required for heading and the time of the year when heading takes place. The former point is illustrated by the relative infestation of sparse-tillering and free-tillering varieties, the latter suffering most severely; the importance of the time of the year in which heading occurs is linked with the numerical abundance of the pest when heading takes place, and injury is consistently greater in late-planted than in early-planted crops. Populations are, in fact, determined both by the amount of grain sorghum grown in the vicinity and by the abundance of alternative hosts such as sorghos, Sudan grass and Johnson grass.

PESTS OF PASTURES.

The usual pasture pests have been active during the year. A light adult emergence of the Scarabeid, *Leidiota caudata* Blk., on the Atherton Tableland in December was followed in January by a late main flight which reached an intensity seldom before experienced in the district. Normally this would portend serious damage in 1941, but there is reason to suppose that, in some areas at least, egg-laying has been comparatively light. Partial sterility of adults which emerge late has been recorded in other Scarabeids. Sporadic outbreaks of the sod webworm, *Psara bicarsialis* Walk., occurred in the Central and Southern districts during late summer, but damage was not extensive. At Mount Larcom, a Tineid, *Opogona cleonyma* Meyr., is commonly associated with the roots of Rhodes grass at certain times of the year, and pasture failure has been ascribed to it. The pastures concerned are, however, heavily infested with the felted grass coccid, *Antonina* sp., and the actual position warrants closer investigation. The latter insect is troublesome on Rhodes grass pastures in some parts of North Queensland, and has during the current year been destructive to couch grass lawns both in coastal and inland areas.

Lucerne pests have received some attention. Attempts to locate the vector of witches broom, a virus disease of this plant, were made in special cages at Lawes, and present indications are that the aphid, *Aphis medicaginis* Koch., is implicated. The data requires critical confirmation, and the necessary work is in hand in the laboratory. A survey of lucerne insects carried out when this work was initiated yielded much useful information regarding these species.

PESTS OF FIELD CROPS.

Cotton pests presented few unusual features during the year though, in early summer, locusts played havoc with isolated crops, both in the Callide and at Theodore. Two species were involved, the Australian plague locust and the spur throated locust, *Austacris guttulosa* Walk., a larger and potentially more destructive species. The occurrence of the latter insect as a pest of cotton is surprising, and may be linked with special conditions operating at Theodore. At all events, the furrow banks of the irrigation channels lend themselves to egg-laying. Both adults and nymphs were implicated in the losses and the amount of arsenic pentoxide in the standard hopper bait had to be increased considerably

before adequate kills were obtained. This may have been due in part to the loose formation of the swarms and the comparatively large size of the nymphs when the necessity for control measures was appreciated.

Insecticidal tests at the Biloela Research Station were designed to evaluate the merits of dusting cotton with lead arsenate and of swabbing cotton with a lead arsenate-molasses solution for the control of the corn ear worm, *Heliothis obsoleta* F. Only moderate infestation occurred, the crop yielding quite well in spite of the difficult type of season experienced. Insecticidal applications by either method failed to increase yields. This result is in line with those previously obtained in non-irrigated areas under similar conditions. Two conclusions can be drawn from the data; (a) that the potential increase in yield which should follow larval destruction is cancelled out by harmful effects on the plant itself and (b) that corn ear worm infestation must reach a higher level than that actually experienced to warrant treatment. In view of the fact that the number of squares carried through to maturity by the cotton plant is much less than that formed, square destruction by pests must necessarily be high before yields are actually affected. As a corollary, it follows that the probable yield of a crop—which can be roughly gauged by the cotton record of the soil—is a fair index of the economic desirability or otherwise of using insecticides on a field scale for corn ear worm control. Average yields of two bales or more per acre may be worth such treatment; yields of a lower order could hardly justify the field use of insecticides though the necessary precautionary measures against migrating corn ear worms together with the approved cultural practices which necessarily play an important part in keeping pest populations within bounds are, of course, indispensable.

This point is illustrated in the current year's results, for while field swabbing was not profitable at Biloela, a test of a swabbing mixture gave substantially increased yields in irrigated cotton at Theodore, even though corn ear worm infestation at that area could not be considered acute.

Maize trap crops treated at tasselling time with a lead arsenate-molasses swabbing solution were planted to protect cotton from corn ear worm attacks both in the Callide Valley and at Theodore. Experience over a number of years has shown that where pests may influence yields, such maize trap crops do have beneficial results on the cotton. The risk of corn ear worm injury is, of course, present every season, and the precautionary measure of planting maize trap crops and swabbing them may merit general adoption at least in the Callide Valley.

FOREST PESTS.

Work on starch depletion in hardwood species has been continued during the year in order to clarify the suggested practice of high ringing as a method of obviating damage by the powder post beetle, *Lyctus brunneus* Steph., in sawn timber. This insect subsists on starch, which must be almost completely removed from the wood if infestation is to be avoided. High ringing achieves this end within two to four months in summer and six months in winter, and may, therefore, be applied at any period of the year if logging programmes are arranged accordingly.

In some experimental trees, coppice developed below the level of the ring, and it was feared that such growth might replenish the sapwood starch reserves and thus in part nullify the main purpose of ringing, i.e., starch depletion in the bole. These fears have been shown to be groundless, for coppice of even twelve months growth has failed to materially augment the starch content of the sapwood in high-rung trees. It is clear, therefore, that high ringing is an adequate insurance against powder post beetle attacks on the timber when it is sawn, and that coppice growth need not be destroyed in the interval between ringing and felling provided the interval does not exceed twelve months. This period allows sufficient time for the needs of forest exploitation.

The incidence of white ants as pests of forestry areas has been surveyed in conjunction with officers of the Council for Scientific and Industrial Research.

The work on log treatments to minimise attacks by Platypodid borers has been concluded. Creosote applied at the rate of 1 gallon per 150 sq. ft. of log surface proved capable of preventing borer attacks for at least ten weeks; logs treated after felling, and again on two occasions after rain have escaped infestation, and opened up in excellent condition after a period of nine months.

INSECTS ATTACKING WEEDS.

The lantana leaf bug, *Teleonomia lantanae*, Dist., has become firmly established in coastal areas north of Townsville, since it was released for distribution in 1939. Conditions

in the far north are apparently very favourable to the bug, for within a space of twelve months, the populations were frequently sufficiently high to inhibit flowering. In some instances, plants have been killed outright or weakened sufficiently to permit other plants to assume a dominant position in the flora. It will necessarily be some time before stability is reached between the bug and its host plant, but there can be little doubt that this insect will make a definite contribution to the lantana control problem in North Queensland. Test colonies have now been established at Eungella, Yeppoon, and Rathdowney in the North-Central, Central, and Southern Coastal or Subcoastal districts. They will for the time being serve as centres for observations on the behaviour of the insects, and may later be used as sources from which colonies can be obtained when further distribution becomes necessary.

The wild blackberry, *Carissa ovata*, has recently assumed some importance as a weed in pastoral areas near Emerald. In late summer and autumn considerable defoliation, which in some instances is fatal to the plant, was reported, and it appears that the Hymenoptera, *Digama marmorea* Butl., must have been the principal cause. Attacks of this kind are apparently not uncommon, but it is assumed that they do little more than keep the weed temporarily in check.

SUPPLEMENTARY PEST RECORDS.

Green peach aphid, *Myzus persicae* Sulz., has been more destructive than usual. The citrus bud mite, *Eriophyes shedoni* Ewing, which was troublesome at Gayndah in spring, is now known to be in most coastal and subcoastal parts of the State. Two mites, *Tenuipalpus californicus* Banks., and *T. australis* Tuck., were associated with injury to passion vines in the Central district; they are less susceptible to lime-sulphur than the ordinary red spider, but can be controlled with white oil sprays. The Chrysomelid beetle, *Coleosporoma sellatum* Baly., was responsible for defoliation in citrus near Rockhampton. Pests of vegetable crops include *Taeniothrips ustatus* var. *cinctipennis* Bagn. on French beans, and the tomato aphid, *Macrosiphum solani* Ashm. Cotton, at Theodore particularly, suffered from sporadic attacks by *Spodoptera exigua* Hb., a Noctuid known as a minor pest in Egypt, but not hitherto of importance here; in the same area and also in the Callide Valley, the flea beetle, *Nisotira breweri* Baly., was very active in spring. Larvae of the Chrysomelid beetle, *Rhyssida morosa* Jac., attacked maize on the Atherton Tableland; outbreaks of this kind are invariably restricted to crops planted in recently-ploughed pasture lands. The Pentatomid bug, *Agapophya bipunctata* Boisd., a purely Northern insect, has been common on Cassias in the legume plots at South Johnstone; it is often associated with the weevil, *Baryopadus corrugatus* Pasc. The cosmopolitan mite, *Paratetranychus unguis* Jac., attacked exotic pine at Passchendale. Witches broom effects in narrow leaved ironbark are now known to be due to the scale insect, *Maskellia globosa* Full. The hoop pine pruner, a longicorn beetle which severs the branches, has now been named *Coptopterus decoratus* McKeown.

NEMATODES.

Experiments elsewhere recently indicated that some degree of success had been attained in the control of the nematode *Heterodera schachtii* by using calcium chloracetate, and, accordingly, it was decided to test this chemical in relation to *H. marioni*, the common root knot nematode, under Queensland conditions. A pot experiment was laid out, using soil containing nematode-infested root fragments, there being four replications of three dosage rates in addition to controls. The rates were calculated as equivalent to applications of 6 cwt., 8 cwt., and 10 cwt., per acre, these covering the recommended dosages. Test tobacco seedlings were sampled at intervals, and it was found that practically 100 per cent. of the seedlings had become infested. However, certain interesting biological data were received from the experiment, among which was a determination that four days after germination, tobacco roots only 6 mm. long were already attacked by nematodes, and, three days later, minute galls were just discernible to the naked eye, these containing first stage nematode larvae.

APIARY INSPECTION.

Apiary inspectional work has been continued. Coastal apiaries along the coast as far as Maryborough were visited and records necessary for the administration of "The Apiaries Act of 1938" compiled. The experience gained has fully justified the new legislation which should do much to place the industry on a sound footing.

J. HAROLD SMITH,

Senior Research Officer (Entomological Section).

(5) REPORT OF THE HORTICULTURAL SECTION.

Horticultural research activities during the period under review have been continued for the most part on the same problems as were being given attention last year, and as in the report dealing with that period, projects will be dealt with under the crop heading.

DECIDUOUS FRUITS.

The satisfactory results which were achieved in the main experimental work on little leaf have been followed up by observations to determine the duration of the effectiveness of the dormant spray programme, and it has been ascertained that when used at the recommended strength the zinc sulphate will keep the trees commercially free from the trouble for at least two years, and that whilst other ways of applying the zinc will relieve the condition, only the dormant application of the spray protects the trees for a reasonable period.

The internal cork problem which affects Granny Smith apples has again been in evidence in several instances this year, and accordingly arrangements have been made to use some of the affected trees for a continuation of the experiment with boron, the deficiency of which element is believed to be the cause of the trouble.

The fertilizer experiments on both bearing and non-bearing trees have been continued. In the case of the former it is apparent that significant increases in yield cannot be expected to follow merely from the use of fertilizers, even if fairly heavy applications of complete fertilizers are used. There are obviously other factors operating, and accordingly, studies have been orientated so that cognisance may be taken of such other factors, as are suspected of being important, notably the status of soil organic matter. The work on green manure crops thus takes on even greater importance, and, accordingly, much time has been devoted to their study.

The work on green manuring is divided into two main categories which are, however, interdependent. The first of these deals with the varieties, and the second with the fertilizing of green manure crops. With respect to the first, fairly comprehensive information is now available as to the relative values of a number of cover crop plants, both legumes and non-legumes, and it is hoped to be able to give definite information to growers in the near future. The importance of nitrogen in promoting the growth of these cover crops has been well demonstrated, but the exact status of phosphoric acid and potash needs confirmation and perhaps amplification. In addition to these major elements, it is considered advisable to obtain also information relative to the trace elements boron, zinc, and copper, since there is evidence of a general deficiency of these in Stanthorpe soils. Work on these trace elements is, therefore, being initiated.

Further work on wither tip of apples, which has been demonstrated to be due to a deficiency of copper, has been somewhat hampered by the restricted development of the trouble in the past season, when it was apparently not so severe as is frequently the case.

BANANAS.

The banana nutritional studies have been continued and a considerable amount of data has been obtained; but its interpretation is by no means simple, and it will take a considerable amount of time to unravel the evidence. It is believed, however, that much additional information will be obtained, and a number of points have been quite definitely established. For example, it seems clear that the success or non-success of a fertilizer is probably determined by its time of application; that the leaf area of a plant must be increased for an increase in yield to eventuate; but at the same time mere increase in leaf area will not of itself lead to greater production. Information dealing with the distribution of the roots of the banana has been published which it is felt should be of value to growers in connection with cultural operations and fertilizer placement.

BEANS.

A considerable amount of work has been carried out on beans during the past six months, and the crops from the main fertilizer experiments are now being harvested. Until the complete crop figures are obtained it is not possible to give any definite information on the subject, but in spite of the very dry weather experienced during the growing season of the main plots, it is anticipated that it will be practicable to give some definite information as to the relative value of each

of the major fertilizer constituents before the main bean season next year. With respect to the placement of fertilizers it has been shown that whilst superphosphate and potash do not in any way affect germination of the seed, the position with sulphate of ammonia is somewhat different, and if this material be placed close to the seed poor germination is very probable. The placing of a fertilizer containing sulphate of ammonia thus is a matter of some importance, and it seems advisable that such a fertilizer should be so placed that it will not be less than 4 inches from the seed.

CITRUS.

The citrus nutritional studies at Mapleton have been continued, but the results to date have been somewhat disappointing in so far as they suggest that comparatively little response can be expected from trees which are probably somewhat beyond their prime. It is felt that the answer to the problem is not likely to be obtainable from experiments done solely on this class of tree, and accordingly it is probable that the results from a similar experiment on young trees, which has recently been initiated in the Gayndah district, will have to be awaited.

Follicelosis of citrus now scarcely comes under the heading of a problem. The use of zinc sulphate is well known to growers generally in the affected areas, and the application of that knowledge is practically universal. The work on woody quarter of mandarins and gumming of lemons was continued throughout the year, and though much information of value concerning the development of the crop was obtained the absence of these troubles on orchards generally has precluded differential results emerging.

PAPAW.

Papaw work is being conducted along the lines outlined last year and sufficient advance has been made to permit of the planting of two progeny trials and one fertilizer trial. The trees in these experiments are made up of pedigreed seedlings of anticipated superior characteristics, and from them it is hoped to get much valuable information. The Betty variety, which was introduced from Florida, and which was highly spoken of in the last annual report, has proved to have one serious drawback in so far as it is apparently very susceptible to some fruit rots. Otherwise it is a very desirable type. Accordingly, a good many of the progenies which are being tested have originated from this variety.

In these field trials some trouble was experienced on account of the extraordinarily severe heat wave suffered in January which was followed by the loss of many trees. However, these losses have been made good, and the plantings are now showing good growth. This work is associated with investigations which are being conducted at the Bureau of Tropical Agriculture at South Johnstone.

STRAWBERRIES.

Strawberry work has had to be somewhat altered on account of the great variability which was found to exist among plants of supposedly the same strain. Selection work was carried out and selected runners have been planted into a field trial at Montville. No yield data is yet available, of course, but in spite of the season which has been unfavourable for strawberries throughout the district, the plants are making satisfactory progress, and it is anticipated that at least it will be possible to obtain sufficient runners of a uniform type to permit of more satisfactory trials being laid down next year. It may be mentioned that the selected material in the first year gave an increase in weight of berries of about 30 per cent. over non-selected plants. In connection with the plant selection programme a lime trial is also being conducted this year.

PASSION FRUIT.

The work on passion fruit is being continued, and whilst repetition is desirable, results to date suggest that phosphoric acid is of comparatively little value as a fertilizer for passion fruit on basaltic soil. As reported last year nitrogen should not be used alone, but should be combined with potash in any passion vine fertilizer in this class of soil.

W. A. T. SUMMERVILLE,

Senior Research Officer (Horticultural Section).

(6) REPORT OF THE PLANT PATHOLOGICAL SECTION.

This report presents a brief summary of the investigational work carried out by the members of the Plant Pathological Section together with some items of special interest which have come under notice during the year.

CEREALS.

As a result of the increased cultivation of grain sorghums, considerable attention has been paid to the diseases associated with this crop. Those noted were smut, red leaf, and kernel moulds. Of these the first mentioned is the only one which could be regarded as potentially serious.

LUCERNE.

The witches broom observational plot at Lawes has been continued and much useful information on the seasonal development and masking of this disease has been obtained. A survey of the incidence of witches broom in various lucerne-growing districts has also been made. Further work regarding the relationship between this virus disease and the physiological condition of its host is contemplated. An attempt to limit the spread of the root rot fungus *Helicobasidium purpureum* by means of soil sterilization with formalin was not successful. This fungus was recorded from a second locality during the year.

TOBACCO.

Fourteen calico dressings designed to extend the life of seedbed covers were the subject of test over a period of six months. The Department's standard recommendations were compared with others recently emanating from New Zealand and elsewhere. Previous results indicating the superiority of the alum-lead acetate single immersion schedule for use under Queensland conditions were confirmed.

BANANAS.

The publication of a comprehensive bulletin dealing with black end and anthracnose of the banana marked the final contribution from the investigations carried out in co-operation with the Food Preservation Section of the Council for Scientific and Industrial Research. The control of these two transport troubles is now shown to be bound up with certain cultural and marketing practices. Certain questions arising out of the latent infection hypothesis referred to in this bulletin are being further investigated in the laboratory since they have an important bearing on the transport diseases of tropical fruits in general.

It is of interest to note that the control measures for squirter disease originally formulated by this section are now being extensively practised with pronounced success in districts subject to loss from this disease.

In view of the renewed attention being paid to the control of leaf spot (*Cercospora musae*) by spraying, information obtained some years ago concerning the correlation of the activity of this disease with meteorological conditions was summarised and published in the "Queensland Agricultural Journal." It was possible to make recommendations regarding the most effective timing for spray schedules.

CITRUS.

Earlier work has shown that home-made cuprous oxide (previously referred to as colloidal copper) was a satisfactory fungicide for the control of brown spot and black spot. In a further experiment carried out last season it was shown that a 3 to 40 cuprous oxide mixture is effective for the control of melanose also. Reducing the strength of the cuprous oxide to half the above did not reduce efficiency in this experiment. The addition of a spreader gave no improvement in disease control.

An attempt to investigate the value of half strength home-made cuprous oxide for the control of black spot in the Gayndah district, where on account of fumigation practices copper deposits have to be reduced to a minimum, failed, since for various reasons, beyond departmental control, the schedule originally planned could not be completed. However, the plot demonstrated the need for a two spray schedule in order to ensure satisfactory control.

A third experiment in the investigation of injury due to cyanide fumigation following the application of copper sprays was carried out at Gayndah. Although a wide range of weather and soil conditions prevailed at the times of fumigation very little injury of commercial importance resulted, even on trees sprayed with Bordeaux mixture (3-2-40) three weeks prior to cyaniding. It was clearly demonstrated that in order to gain a satisfactory understanding of the conditions governing fumigation injury complete control of the various factors involved will be necessary.

Following on the investigation of the effect of combining home-made cuprous oxide with oil sprays reported previously, a further experiment was undertaken to ascertain the effect of combining this fungicide with lead arsenate and zinc sulphate. Final results from this plot are not yet available.

A repetition of previous outbreaks of lemon rind breakdown was recorded. These outbreaks have been shown to be directly related to extended periods of rain or dew deposition, but it is considered that a nutritional factor is of fundamental importance in its occurrence. It is planned to investigate the control of this disease by variations in manuring practice.

The phytocidal effects which are observed to follow the use of various sprays on citrus have prompted the establishment of a plot to investigate the nature and cause of chronic spray injury in this crop. A block of Valencia orange trees half on lemon and half on orange stock has been set out, and it is intended that a comprehensive selection of sprays will be applied over a period of three to four years and any variation in growth carefully recorded. The results should materially assist in all future work with citrus sprays.

PINEAPPLES.

During the winter and spring months of last year attention was given to certain field aspects of the brown speck problem. The casual organisms, *Penicillium* sp. and *Fusarium* sp. were located in the plantation and the method of fruit penetration established. An insect agency does not appear to be necessary.

The early development of the bacterial disease known as marbling was also investigated. Degree of infection is determined by age of the fruit, meteorological conditions, and certain obscure characteristics of the flower and fruit.

An attempt was made during the last summer season to obtain further confirmation of the efficiency of the present recommendations for the control of water blister (*Thielaviopsis paradoxa*) by sanitation measures. A detailed survey was made of practically all farms from which serious losses from this disease were being reported. Forty-three growers were visited, and as in the past, there was a definite correlation between the cleanliness or otherwise of the packing shed and its surroundings and the extent of the water blister losses sustained.

Laboratory experiments were also carried out in an attempt to find a means of satisfactorily controlling *Thielaviopsis* side infections. Seventeen fumigants and dipping fluids were tried. Gaseous treatments proved unsuitable either on the scale of inefficiency or impracticability. Of the dips a solution of benzoic acid in alcohol was very effective, but its value from an economic standpoint has yet to be proved.

Preliminary investigations were commenced to determine the influence of fruit type on infection with *Thielaviopsis* and on the subsequent development of the disease. These tests failed to support the general opinion that heavily fertilized fruit are more prone to water blister.

Top rot (*Phytophthora cinnamomi*) appears to be causing increasing losses in young pineapple plantings, and accordingly, a plot was laid down to obtain further information regarding the most effective control of this trouble. The treatments included dipping the planting material in Bordeaux mixture, dusting it with sulphur, and improving the drainage of the plant bed. So far no results are available from this experiment.

DECIDUOUS FRUIT.

The brown rot experiments initiated in 1938 were continued. This work was designed to test the value of the three sprays—lime sulphur, dry mix sulphur, and colloidal sulphur and different timing schedules on the control of brown rot under Stanthorpe conditions. Two varieties of plum and one each of peach and nectarine were included in the experiment. Owing to the dryness of the season insufficient disease developed for a comparison of the fungicidal effect of the different treatments to be made. However, some information was obtained regarding the phytocidal effect of the different forms of sulphur—lime sulphur possessing definite disadvantages from this aspect.

PAPAWS.

The papaw investigations concentrated mainly on the various fruit rots, a subject of major importance with this crop. Previous conclusions regarding the pathogenicity of *Asochyta caricae* and species of *Gloeosporium* have been confirmed—the latter being the most important. In addition, a *Phomopsis* sp. was found to be responsible for a distinctive type of spotting during the spring months. Additional evidence has also been obtained regarding the source of the inoculum of these organisms on the dead leaf stalks and other parts of the plant. A preliminary experiment in which copper sprays were applied to fruit in the later stages of development failed to exercise any appreciable control of ripe fruit rot. A more

extensive spraying experiment is now under way, and in this the value of a spray covering throughout the full period of fruit growth is being tested against less intensive treatment. The nature of the papaw fruit surface has necessitated a search for more efficient spreaders for use in this work.

Dieback was generally less prevalent during the past summer than in 1939, but in some areas losses of 8 per cent. to 10 per cent. of the plants were observed. Investigations regarding the etiology of this trouble were continued. The seasonal development was recorded, and a field survey was made with the object of correlating the occurrence of dieback with various soil characters.

Yellow crinkle was unusually prevalent this year and caused widespread losses—up to 30 per cent. of the trees being affected in some plantings. Attempts at mechanical transmission of the disease in the field were unsuccessful, and the possibility of transmission by grafting was difficult to prove because of the weakness of the scions from affected trees.

Field observations have indicated that powdery mildew may be active and cause appreciable damage as late as the end of September. It is desirable that dusting operations should be prolonged accordingly.

TOMATOES.

Three experiments dealing with the application of fungicides were carried out during the 1939 season, the results of which are now available. Both fungicidal and phytocidal effects were investigated. Amongst other things it was shown that the dusts, and in particular, a copper carbonate dust, give the highest total yield, both in number and weight of fruit, whereas the wet sprays give the most efficient disease control. Home-made cuprous oxide was as effective a fungicide as Bordeaux mixture, while bringing about considerably less reduction in yield and plant growth. Accordingly, this fungicide is now recommended in all cases where the possibility of heavy disease incidence dictates the use of a wet spray. This season two further trials are being carried through. The objects are largely a confirmation of previous work with the addition of a copper oxychloride spray to those tested.

Soil treatments with sulphur for the control of bacterial wilt were again tried in two localities very subject to this disease. The results although not conclusive, indicated possibilities along the lines of modifying the present cropping programme in order that the soil may remain at the lowest pH value for a longer period. In conjunction with these plots there was carried out a resistance trial including twelve varieties. Of these the most promising proved to be Sensation, Homer, Marvana, and Denisonia.

Three other variety trials were also instituted involving the use of 22, 6, and 16 different varieties respectively. The object was to ascertain the resistance to the various wilt diseases of a number of types whose reactions under Queensland con-

ditions were not fully known. Selections are being retained of any material which appears to offer promise, and in this connection cultural characters of the plant are also taken into consideration. In a further variety trial, several standard varieties were planted at intervals throughout the growing season and the seasonal influence on yield and disease incidence noted.

During the season widespread outbreaks were recorded of a bacterial spot which appeared to be due to *Bacterium vesicatorium*. Of the fungus diseases target spot (*Alternaria solani*) was responsible for more loss than Irish blight where routine control measures were practised. As the former is evidently more difficult to check by means of fungicides further attention is being given to the matter of its control.

MISCELLANEOUS.

An unusual malformation of beetroot was provisionally diagnosed as due to boron deficiency. In co-operation with the Horticultural Section an experiment is being laid down to test this hypothesis.

LEGUME INOCULATION.

The inoculation of legumes with cultures of the appropriate *Rhizobium* strain has become increasingly popular with Queensland farmers. This has called for a considerable extension of the Department's supply of these cultures. This work is being expanded as far as is practicable.

FORESTRY.

The main objects in the fused needle investigations having been achieved the Forestry Sub-Department has been able to release for publication an extensive bulletin dealing with all aspects of this problem. In particular, the hypotheses underlying the success obtained by phosphate fertilizing have been dealt with, and an understanding of these should have a far-reaching effect on plantation management. Present work is mainly concerned with the practical application of the results to plantation routine. Various mycorrhiza forming fungi are being tested on *Pinus caribaea* and *P. taeda* with a view to finding the one most efficient in promoting a rapid growth.

A number of cases of chlorosis in hoop pine nurseries have been investigated. Leaf injection has shown this to be due in most instances to an iron deficiency which is closely linked with high salt concentrations in the water used for irrigation.

Further experiments have been carried out with maple seedlings (*Flindersia brayleyana*) in North Queensland to investigate the method of infection with the maple gall bacterium.

J. H. SIMMONDS,

Senior Research Officer (Plant Pathological Section).

(7) REPORT OF THE PLANT PHYSIOLOGY SECTION.

As in previous years, the major part of the work carried out during 1939-40 by officers attached to the Plant Physiology Section has been directed at problems relating to pineapple culture. Other investigations have been concerned with soils used for papaw-growing in the metropolitan area, and with the tomato soils of the Redland Bay district. The work of the section has thus been confined solely to plant nutrition problems; pineapple selection studies and investigations on pineapple diseases are conducted by the Horticultural and Plant Pathology Sections respectively.

The major projects which have received attention during the past year, and the results obtained, are briefly reviewed in the succeeding paragraphs.

SOILS INVESTIGATIONS.

Last year it was reported that investigations on the coastal soils of Southern Queensland were being carried out with the object of defining their relative suitability for pineapple culture in terms of certain physical constants, particularly those influencing the movement and retention of soil moisture. Continuation of these investigations during the past twelve months has provided data from which the crop-producing potentialities of the major soil types investigated may now be assessed. Furthermore, the data which has been obtained provides a basis for distinguishing between unproductiveness brought about by lack of essential plant foods (chemical infertility), and that due to poor physical conditions in the soil. The distinction is of considerable practical importance because chemical infertility can be remedied by the application of suitable fertilizers, while it is rarely practicable or economic to attempt to modify the physical properties of a soil. Consequently, the work which has been carried out has made possible the formulation of criteria whereby gross errors in the

selection and management of soils for pineapple culture may be avoided. An article dealing with these and other aspects of the investigations was published during the year, and further articles are in course of preparation. The investigations are being continued, particularly as they concern the influence of seasonal conditions on the amount, availability and penetration of soil moisture under different systems of soil management.

Preliminary investigations on soils used for papaw growing in the metropolitan area have shown that a marked correlation exists between soil type and the falling off of immature fruit which occurs in some localities during dry periods. The data so far obtained indicates that, as in the case of pineapples, the suitability of a soil for papaw growing is determined more by its physical properties than by its chemical constitution. Application to papaws of fertilizing materials contained nitrogen, phosphoric acid, and potash—both singly and in combination—gave no significant response on a soil on which "fruit drop" has occurred on three successive seasons, but very marked response, particularly to nitrogen, on a soil type on which premature falling of fruit has not been recorded.

During the latter part of the year a reconnaissance soil survey was undertaken of the Redlands tomato-growing districts. This survey, which entailed a considerable amount of analytical work in the laboratory, provided basic data for a series of tomato fertility trials which are being carried out by officers of the Fruit Branch. The survey showed that the cultivated soils of the Redlands area are generally well supplied with phosphoric acid and potash as a result of residual accumulation over a period of years. As far as the soil factor is concerned, existing tomato production problems in the Redlands district appear to be related as much to poor physical conditions as to lack of essential plant foods.

SOIL DEFICIENCY DISEASE INVESTIGATIONS.

Previous reports have contained accounts of investigations on the disease of pineapple plants known as sclerosis or crookneck. This earlier work showed that treatment of the soil with minute quantities of zinc salts gave a measure of control over the disease, indicating that in part, at least, it was due to a deficiency of this element in the soils on which the disease is known to occur. During the past year the investigations on crookneck disease have been extended to include not only further trials with zinc but also with copper and manganese. These trials were designed to allow for two levels of treatment with each of the three elements applied singly and also for the testing of copper and zinc applied in mixture. Though none of these treatments has been completely effective in preventing the development of crookneck symptoms, the initial response obtained from copper exceeded that obtained from zinc; copper and zinc together, however, gave a better response than that obtained from either zinc or copper alone. No response has been obtained with manganese. The effects of the copper treatment were perceptible within three weeks of its application, and for three months no crookneck symptoms appeared in any of the plants so treated. Subsequently, crookneck symptoms developed in a percentage of the copper-treated plants, and the disease is now present in all plots except those treated with both zinc and copper. More striking than the effect of copper in temporarily arresting the development of crookneck symptoms has been its effect on growth. Copper-treated plants have consistently developed at a faster rate than check plants receiving equivalent amounts of fertilizer, and, where not affected with crookneck, the leaves are broader, deeper in colour, and more spreading in habit. The possibility of exploiting the growth-stimulating effect of copper and zinc to reduce the amount of fertilizer required to maintain pineapple production at profitable levels during the present period of acute fertilizer shortage is being investigated.

PINEAPPLE FERTILITY TRIALS.

The objectives and layout of these trials were described in the last annual report. Harvesting of the plant crop commenced during March, but is still incomplete. Consequently, interpretation of the data at present available must be regarded as purely tentative.

The effect of increasing amounts of nitrogen on both growth and yield has been pronounced up to an amount equivalent to 1,700 lb. of sulphate of ammonia per acre. Even the lightest applications have had a marked effect on size of fruit. Nitrogen also has had a very marked effect on suckering, so that yield differences between low and high nitrogen plots are likely to be accentuated in succeeding crops.

Small, but probably significant, responses to increased amounts of phosphoric acid have been obtained up to applications equivalent to 960 lb. of superphosphate per acre.

With increasing amounts of potash there has been a progressive increase in both size of fruit and size of plant. This has held true over all levels of application up to an amount equivalent to 1,080 lb. of sulphate of potash per acre. Ripening of the fruit appears to be delayed by heavy applications of potash; on the other hand, the utilisation of nitrogen by the pineapple plant is apparently dependent on an adequate supply of potash.

Inoculation experiments which were carried out by the Plant Pathological Section showed that fruit harvested from plots receiving no added nitrogen during growth were more susceptible to infection with the water blister fungus (*Thielaviopsis paradoxa*) than those from plots receiving the heaviest applications of sulphate of ammonia (4,300 lb. per acre). This is contrary to the view, prevalent amongst growers, that heavy fertilizing with sulphate of ammonia leads to increased losses from water blister.

Yield data for each of the eighty plots is being compiled on the basis of individual fruit weights. As long as a cannery outlet was available, the weight of each fruit was recorded both before and after the removal of the top. Since

the canneries closed down in April, the gross weights of the individual fruits have been taken and top weights have been estimated in order to give the net weight of fruit. No significant difference in size or weight of top has been recorded for any of the fourteen different fertilizer treatments.

BLACK HEART INVESTIGATIONS.

Further progress has been made towards elucidating the factors determining the incidence of the black heart disease of pineapples, though a full understanding of the conditions governing susceptibility or resistance to the disease has not yet been obtained. A finding which may prove of fundamental importance is that a correlation appears to exist between the sugar-acid ratio of the fruit tissues and the occurrence of black heart. Fruits which are relatively high in acid content, but which contain low or moderate quantities of sugar, develop black heart under conditions where low acid fruit with the same sugar content remain sound. Since decomposition of acids and accumulation of sugars occurs simultaneously during the final stages of ripening, the development of black heart symptoms can thus be correlated with a derangement of the normal ripening process and the immobility of the sugar contained in the leaves. Field experiments directed at maintaining a condition of physiological stability in the pineapple plant throughout the winter months are now in progress.

Field trials carried out during the past year have shown that, contrary to the opinion commonly held by growers, heavy applications of nitrogen, whether as nitrate of soda or sulphate of ammonia (up to 100 lb. per 1,000 plants during the period of fruit development) are not associated with an increased incidence of black heart. Analytical work carried out in connection with these field experiments showed that the nitrogen content of sound fruit is appreciably higher than that of diseased, and that there appears to be a positive correlation between the content of carbohydrate and nitrogen. It was found also that fertilization with sulphate of ammonia increases the uptake of iron and phosphorus, thus confirming previous work showing that the availability of these elements is related to the soil reaction.

ACETYLENE FORCING EXPERIMENTS.

The method originally devised for using acetylene to force blossoming in pineapple plants involves the use of special equipment for preparing a saturated solution of the gas in water. During the past year trials have been carried out with a simplified method which dispenses with the need for special equipment. Briefly, this simplified method consists in dropping fragments of calcium carbide directly into the hearts of plants which have reached a suitable stage of development. By this means an evolution of acetylene gas is secured in proximity to the growing points of the plants by the action of water which collects in the axils of the heart leaves following rain or heavy dew. Although there has been a good deal of inconsistency in the results of the trials already conducted, the method merits further investigation on account of its simplicity. The use of excessive quantities of carbide has been attended by serious burning of the tender heart foliage, while too small an application fails to achieve the desired result. Complicating factors are the growth status of the plant and the weather conditions at the time of treatment. It has been found that plants which are in a state of vigorous growth do not respond to the treatment as readily as those in which accumulation of carbohydrates has begun to take place in the leaf tissues. Observations indicate, also, that the Queen and Ripley Queen varieties are both more responsive to acetylene treatment than the Smooth Cayenne. In the Bowen district, however, the acetylene treatment is now universally employed for regulating the flowering period of the latter variety, and its use in the southern districts is increasing.

H. K. LEWCOCK,

Senior Research Officer (Plant Physiology Section).

REPORT OF THE DIRECTOR OF AGRICULTURE.

SEASONAL.

The period from August to October was dry with severe frosts in many farming districts. Moderate rains fell during October, which were sufficient to revive pastures and permit of the preparation of land for summer fodder and market crops.

Storm rains during November and December were sufficiently heavy to permit cultural and sowing operations to proceed normally. During the early part of the present year, heavy rains and cyclonic winds caused some damage to crops, but generally the rains had a most beneficial effect, and assured good yields of market and fodder crops.

WHEAT.

Conditions generally were favourable for wheat production, particularly during July and August. Some damage was caused by late frosts and dry weather during September, but, on the whole, the results were highly satisfactory in respect of both yield and quality.

The total yield was 6,751,000 bushels from an aggregate area of 360,459 acres—the second highest yield on record.

The five leading varieties were Queensland-bred wheats, and represented over 45 per cent. of the aggregate area sown.

A number of observation and selection plots were established throughout the wheat areas.

The services of the Senior Instructor in Agriculture were again made available for co-operation with the Wheat Board in selecting areas of wheat to be reserved for seed. Co-operation in this way can only have a very beneficial effect on the industry.

MAIZE.

Reports from most maize-growing areas have been very favourable regarding both total yield and yield per acre.

On the Atherton Tableland, early indications were that a heavy yield would be obtained, but cyclonic weather early in the new year, followed by prolonged wet periods, reduced the yield very considerably.

Seed maize improvements was continued, as well as the raising of large quantities of pure seed of a number of proved varieties for distribution to farmers.

SORGHUMS.

The cultivation of grain sorghums has increased remarkably on the Darling Downs, also in other inland districts, and during the season under review large quantities of grain were marketed at very satisfactory prices.

Where the grain is to be harvested mechanically, the dwarf varieties have proved very suitable and are now extraordinarily popular, but where the crops are grown for grazing many stockowners still prefer the taller-growing varieties such as Feterita, because of the greater bulk of fodder this variety produces in addition to a large seedhead.

A large number of seed propagation plots, also yield and spacing trials, produced very satisfactory results.

A considerable number of recently-introduced varieties also were under trial, some of which show sufficient promise to be worthy of further trial plantings.

TOBACCO.

Excellent results were obtained in the three chief tobacco-growing districts, and despite the fact that cyclonic conditions in the northern district caused damage to some crops the yield for the whole of the State was a record both in respect of weight of leaf and value.

The area planted was 4,530 acres with a yield of approximately 3,000,000 lb. of cured leaf valued at £340,000 which constituted a record. The average price per lb. was approximately 27d.

A large experimental programme was again conducted. It is very interesting to observe from officers' reports how extensively and successfully benzol is now being used in the seedbeds.

Very favourable reports also have been received regarding the extent to which "yellow patch" has been overcome as a result of carrying out Departmental seedbed fertilizer recommendations.

PEANUTS.

Peanut-growers in the South Burnett had another very favourable season and many high yields were obtained. Fine weather during harvesting was experienced, and this was reflected in the excellent quality of the nuts.

Experimental and selection work was continued with very interesting results, not the least interesting of which were the stook-capping experiments, which are being watched with keen interest.

POTATOES.

Favourable rains during July and early August provided ample moisture for the establishment of the early crop, but progress was retarded by dry westerlies in August and September and severe late frosts.

Although irrigated crops made satisfactory progress and gave substantial yields, the returns from unirrigated lands were generally below average, with a high percentage of small-grade tubers.

November and December rains were favourable for the later maturing crops.

Market prices were unusually high from July to October, rising in some instances to over £20 per ton, but declined in November with the normal seasonal deliveries.

The January-February rains were ample, and planting of the main or autumn crop was completed under very favourable conditions.

March rains were in excess of crop requirements, and in some places waterlogging caused complete loss.

Conditions later were favourable, resulting in average to over-average yields being obtained throughout the chief Southern districts. First deliveries were made in April, with the main diggings occurring throughout May and June. Fair average prices ruled throughout the season, both growers and buyers being aided by the new grading regulations.

FODDER CONSERVATION.

The interest in fodder conservation has been maintained as an outcome of the efforts of Departmental officers, and also because of the fact that sufficient silos of one type or another have been constructed in most dairying districts to demonstrate their value as a provision against dry periods. Three sets of moulds which are loaned to farmers by this Department have been in constant use.

SOIL CONSERVATION.

The necessity for dealing with the problem of soil erosion before it becomes acute is being appreciated much more than previously, judging by the number of requests received for the services of an officer to take levels and offer advice as to the best means of dealing with the problem.

An officer specialising in this work has visited a number of properties in the various agricultural districts of Southern Queensland, and the conservation work designed by him on the several properties is creating keen interest and will consequently be a means of convincing others in the district of the value of this work.

GENERAL.

A heavy experimental programme was conducted by field officers during the year, in co-operation with officers of the Research Division, in addition to their ordinary instructional duties.

The work performed by the Head Office and Field Staffs make it possible to review the work for the past year with considerable satisfaction.

Attached hereto are summaries of reports from officers stationed at the various centres.

CHAS. J. MCKEON, Director of Agriculture.

FIELD REPORTS.

SOUTHERN DIVISION.

DARLING DOWNS.

Seasonal Conditions.—An unusually wet winter followed by a good spring produced remarkable growth in wheat and other winter-growing crops on the Darling Downs, and assured prospects of a heavy harvest. October was dry, but useful rains occurred in November. From then until March heavy and well-distributed seasonal rains were experienced generally in the Southern Division. April was dry, but good rains fell in May. At present, a general substantial fall is required to ensure the establishment of this year's winter crops.

Field Activities.—Field work included fertilizer and varietal trials with tobacco; sorghum trials; onion varietal

trials; feeding trials with winter cereals; oat hay trials; oat varietal trials; seed increase plots with sorghums; sorghum versus maize trials and pasture improvement work; and judging of last season's wheat crop competitions in the Oakey, Pittsworth, and Warwick districts. In addition, crop inspections were made for the selection of commercially pure seed.

The acreage prepared for fodder and grain crops was much larger than usual.

Wheat.—The wheat grain crop was of good quality. High bushel weights of grain were obtained, many ranging from 64 to 68 lb. per bushel for grain straight from the harvester. The season's production was 6,751,000 bushels from approximately 360,460 acres.

Maize.—A larger maize acreage was planted than for the previous crop. Yields, on the Darling Downs particularly, were higher than usual.

Grain Sorghums.—The acreage under grain sorghums continues to expand. Crop success was general, and yields up to 15 bags to the acre were common.

In the drier agricultural regions these sorghums are displacing maize because of the uncertainty of the latter crop for grain production.

Fodder Conservation.—Fodder storage is now practised more extensively, especially in the form of silage. Larger quantities of lucerne hay, in addition to hay from other crops, were stacked as fodder reserves than had previously been the practice.

Tobacco.—Varietal and fertilizer trials and single-plot demonstrations in the Texas tobacco areas produced interesting results. Some improvement in colour and texture was observed, but results generally, because of the influence of weather and other factors, were inconclusive.

The production of tobacco leaf in Yelarbon, Texas, and Inglewood districts increased in area, yield, and quality. The season generally was satisfactory. Disease control measures recommended by the Department proved effective. Insect pests were kept in check to the extent that no serious crop damage was reported.

Registered growers actively engaged in the industry in the districts mentioned number 121. For flue curing, 113 growers cultivated 790 acres; and for sun and air curing, eight growers had an aggregate of 45 acres under crop. The estimated yield from the 790 acres of flue-cured leaf is 757,000 lb.

Pasture Improvement.—Propagation and distribution of rootlets and seed from the pasture improvement plots were continued, and the plots were well maintained throughout the year. Farmers and graziers have shown an ever-widening interest in this as well as in other branches of departmental field work.

Unusual interest has been aroused in a grass named *Urochloa panicoides*, now spreading widely on the Darling Downs. It is regarded by many farmers as a possible control for the "mint weed." It comes away very quickly, and forms a good ground covering. It has become well established on stock routes, and is apparently holding the "mint weed" in check.

Of winter-growing grasses, little success has been achieved. The *Agropyrum*s, five different species, which are under observation, have not shown their ability to withstand dry conditions.

SOUTH BURNETT.

Beneficial winter and early rains consolidated the crop situation in the South Burnett. An unbroken dry period from mid-August until the end of November, however, disorganised seasonal farm routine. Destructive storms in December caused serious soil erosion in some localities, and this experience was convincing evidence of the necessity of systematised erosion control. Field activities were concentrated on demonstrating methods of preventing the loss of valuable top soil, and plans for the co-ordination of effort where community drainage systems were advisable were adopted. Farmers, realising that soil erosion means a vanishing asset, are keen to co-operate with officers of the Department in this important field work.

An abundance of soil moisture, provided by the rains of an unusually wet winter, was available to all summer crops, including maize and peanuts, which are among the chief products of the South Burnett. High yields were the result. In fact, the peanut harvest was exceptionally heavy, and returns up to fifty bags to the acre were not uncommon. On some farms the yield was as high as sixty bags to the acre, and in every case the quality of product was good.

The maize crop was concentrated in one bulk planting, and heavy yields are expected.

The acreage under grain sorghums was increased, and crop success will probably lead to a further expansion next season. The varieties favoured are those suitable for header harvesting.

For dairy farmers and pig-raisers the year was an exceptionally good one.

Field trial programmes included several repetitions of experiments conducted in the previous year. New trials were designed to obtain data for guidance in general economic crop development in this richly fertile region of the State. Peanut experiments covered plant selection for Virginia Bunch and Red Spanish varieties; a Virginia Bunch spacing trial; a peanut grade seed trial; a peanut varietal trial; a grain sorghum varietal trial; grain sorghum and maize yield trials; a saccharine sorghum varietal and yield trial; sorghum selfing plots; sorghum pure seed plots; broom millet and seed plots; oat grazing and varietal plots; plot trials of introduced grasses; sweet potato plots; and lespedeza trials.

SOUTH COAST AND WEST MORETON.

An excellent winter season favouring high production from all winter fodder crops was followed by fair average conditions up to December and a period of heavy over-average rainfall from then until March.

Intense heat at tasselling time reduced the maize grain yield, but this was offset by a good harvest from early sowings, and heavier returns from late main crop sowings. All summer fodder crops yielded well.

Spring potato crops made good progress until September, when all unirrigated fields were affected by continuous dry weather. Nevertheless, heavy deliveries in November indicated that the aggregate yield was up to the average. A heavy planting for the autumn crop was completed in February, with ample soil moisture available for early growth. Over-average yields of good-quality potatoes were dug from May to July. As market rates remained firm, potato-growers had a satisfactory year.

GYMPIE.

Notwithstanding periods of low rainfall and intense summer heat, production in the Mary Valley and other near North Coastal farming lands was maintained at a comparatively normal level throughout the year.

Summer plant growth was rapid and luxuriant—the effect of heavy seasonal rainfall. Intense heat in January and February offset that effect, and autumn prospects held little hope of fulfilment of earlier seasonal promise. Good rains in March and April brought relief and fodder crop and pasture revival and ensured a good winter for stock farmers.

The slow response of many *paspalum* pastures to good rainfall conditions and the persistent encroaching of worthless grasses has induced many farmers to take a more active interest in pasture renovation. Although no extensive activity is reported, some small areas recently renovated have, by the improvement of growth, further demonstrated the need and economy of this aspect of pasture management. The main restriction to large-scale operations is a lack of sufficient power to work over old grasslands effectively.

Early spring maize sowings failed. Later plantings in October were more successful, for, although only light strikes were obtained, and tasselling was delayed by dry weather, and the maturing crop subjected to withering heat, moderately good crops were harvested. Main crop sowings were too young for yields to be seriously affected by the heat waves in January and February and grain baggings were heavy.

Seed maize propagation plots embracing five varieties were established, and all of them provided grain from which seed could be selected.

Ear-to-row tests of Star Leaming, Golden Beauty, and Improved Yellow Dent were established. Fairly good to good yields were obtained and row selections made from all plots.

The spring potato crop, grown for seed for the main autumn planting, was sown under favourable conditions and good yields were bagged. Main crop sowings also were made under favourable conditions, and heavy late summer rains induced full and rapid growth, which culminated in a heavy harvest.

Two potato trials, embracing six standard varieties, were established in the course of the year.

Farmers in this district are generally content to rely on the normal abundance and succulence of pastures to provide enough stock feed for summer, and only limited areas of summer feeds are propagated. Even sorghums, the most extensively sown, are usually planted at a time calculated to provide for maturity and maximum value in winter. Saccaline is the predominant variety sown, and, to further test the merits of the lesser-known sorghums, a preliminary trial of eight varieties, including saccaline, was introduced this season. Comparative results indicate that varieties other than saccaline also are suitable for this district.

With the very steady demand for pig products, suitable crops for pig-raising, especially grain sorghums, are increasing in cultivation.

The sowing of winter forage crops is more extensive, but is practically confined to the growing of oats as a grazing crop. To ascertain the most suitable variety of oats for this district, the first of a new series of experiments was sown in June, 1939.

A green-feed trial in combination with a grazing trial was conducted at Sexton also a rust-resistance variety test at Tuckekoi. Results require confirmation before definite conclusions can be deduced.

MARANOA.

With an aggregate rainfall of 1,648 points the season in the Maranoa district was one of low rainfall, nearly two-thirds of which occurred in February and March. However, up to October the position was not so unfavourable as this would indicate because of the excellent season extending from January to June, 1939.

Because of favourable conditions during the autumn of 1939, grasslands were in good condition for winter and the sub-surface moisture, assisted by showery weather, influenced substantial herbage growth. Thus, despite the dry weather which followed, ample feed for stock was available, to a large extent, well into summer.

An inter-row cultivation experiment with Blue Panic and Rhodes grass is now well established.

The value of fodder conservation is becoming more widely appreciated, and some advance has been made towards the practical realisation of its necessity. Now that the sorghum group has become a popular fodder crop considerable acceleration of the trend towards systematic conservation can be expected.

Pit silos increased in number during the year.

Large acreages of wheat were sown during the March-May period under excellent growing conditions. Because of the large areas of wheat fed off by sheep and cattle during the season and lower yields, the harvest was very much lighter than that of the previous season.

Extensive areas of winter fodders—such as wheat, oats, and barley—were established during the 1939 season.

Other fodder crops grown on an expanding acreage including sorghums—mainly Wheatland Milo, Kalo, and Feterita—and Sudan grass. The value of the dwarf sorghums for late planting for fodder was well illustrated and, as a rule, gave better results than Sudan, both in respect of rapidity in growth and resistance to early frosts.

The value of sorghum for giving quick fodder during summer months, fattening stock and providing an area where sheep can be kept away from the menace of grass seed in the early winter months, has not failed to impress stock owners who have hitherto not grown fodder crops. This should have the further effect of influencing a larger use of winter fodders as more land is cultivated.

Poona Cowpea remains the most popular variety of this crop in the comparatively small areas in which it is grown.

Extensive areas of grain sorghum were planted—Wheatland Milo chiefly in the western portion of the district, and Kalo around Chinchilla.

Although a large increase in the acreage under cotton was anticipated, seasonal adversity was against its realisation. Interest in the crop has not lessened, however, and large acreages are planned in this season's cropping programmes.

CENTRAL DIVISION.

BUNDABERG.

With the exception of the last quarter, the Bundaberg district had a remarkably good year.

Dairy production attained record figures during the flush season, but chart lines curved downward during the heat waves of last summer.

Cotton planted early was affected by abnormal summer heat, but November plantings yielded well.

Special observation plots of grain sorghums and sweet sorghums (for fodder) were planted with success.

An interesting grain experiment with five grain sorghum varieties and a maize variety was planted as a randomised trial for comparative purposes. Two of the sorghums produced a higher grain yield than the maize. The actual acreage yields, respectively, were:—

Grain Sorghums.—Hegari, 56 bushels, 54 lb.; Kalo, 40 bushels, 18 lb.

Maize.—Yellow Dent, 38 bushels, 16 lb.

Results of trial and observation plots indicate that the best of the dwarf and semi-dwarf sorghums are Kalo, Dwarf Pink, Hegari, and Wheatland Milo; and of the tall-growing varieties, Sharon and Pietersburg White show definite promise.

Trials have demonstrated that some of the grain sorghums are capable of producing high yields of grain under adverse seasonal conditions. The fact that the yield of grain last season was at least ten times that of the previous season is evidence of their value. Approximately twenty-five recently-introduced varieties were tested with some of the recognised standard varieties, and only a few of them proved worthy of further trial.

Of the grain sorghums, Hegari proved most resistant to insect pest attack.

Weather conditions favoured the tobacco crop, both in respect of yield and disease control. From the season's experience, the best crops grown were those of October and early November planting. It was found that these crops were far enough advanced to resist mould attack and produced leaf ready for curing in January and February, which are regarded locally as the best curing months.

Tobacco varietal and fertilizer trials and demonstrations were conducted with some success. A rotational trial also was conducted. Leaf from all trials cured well, but sales returns are not yet available.

Spring-planted potato crops were more successful than the later sowings, weather conditions being the retarding factor in the latter. Most of the crops grown on river loams and where irrigation was practised yielded well, up to eight bags to the acre in some fields.

Onions are being persevered with, but in a small way as yet. Conditions were too dry for good results.

Broom millet is increasing in acreage, largely because of its possibility as an alternative crop to sugar cane.

Interest in green fodder cropping is increasing.

Cotton cultivation is expanding. Last season, some excellent crops were grown on the granite soils near Mount Perry, which yielded up to three bales to the acre. On scrub soils and on forest red and black soils around Gin Gin, from one to two bales to the acre were picked. Even the poorer grey soils around Bundaberg from one to one and-a-half bales to the acre.

MONTO.

Weather conditions were variable throughout the year. Dryness during the last quarter of the term caused a substantial drop in cream supplies.

The value of grain sorghums was proved during the unusually hot summer. Sorghum-maize trials demonstrated the superiority of the former as a grain crop under hard conditions. The best sorghum varieties for local cultivation from present experience are Wheatland Milo, Kalo, and Hegari.

The sweet or saccharine sorghum trials were of considerable interest and once supplies of pure seed are assured this valuable fodder crop will be grown much more extensively. Of the varieties included in varietal trials—Sugardri, Jones, Sumac, Italian, Atlas, Hanly, and White African—Sugardri and Jones gave the best results, yielding at the rate of approximately 26 tons of green material to the acre. They also retained their succulence after being frosted for a longer period than the other varieties included in the trial.

Fodder conservation displays were arranged at the Monto and Mundubbera shows, which included models of silo types. These attracted considerable interest and acted as a stimulant to local progress in fodder storage.

Of five varieties of broom millet under trial in this district, only two—White Italian and White Italian (late type) did well. Sufficient seed was selected for further trials.

Sweet potato trials were successful enough to warrant an extension of acreage.

Lucerne, oats, grazing and green fodder trials were affected more or less by seasonal adversity.

ROCKHAMPTON.

The year was one of erratic rainfall in the Rockhampton district, but, nevertheless, the pastoral industry had a good season, especially in the coastal country and in the Far West. At present, grass and water are in abundance, although rain is needed to refresh the pastures, particularly in coastal localities.

Although rainfall was irregular, the season was better than the average for the agriculturist, notwithstanding the fact that short dry periods alternating with heavy flooding caused the failure of many crops.

For dairy farmers, too, the season was good, and cream supplies were maintained normally throughout the year.

Under the influence of the Department more attention is being given to the storage of fodder, also to irrigation where its practice is economical.

The late-planted maize grain crop, which is not yet in the bag, promises to be one of the heaviest produced in the Central Division for years.

Good potato yields were bagged from irrigated fields.

Peanut production declined in quantity and quality because of excessive rains in localities of cultivation.

Heavy crops of pumpkins were harvested, although the acreage was practically the same as that of the previous season.

The acreage under lucerne has expanded. Of winter fodders, large areas of oats were grown, both for grazing and hay storage. Sudan grass, because of its suitability to district conditions, was grown more extensively than other summer fodders.

The area under saccharine sorghums is increasing as dairy farmers become more convinced of their value in late autumn and winter feeding, and also for silage.

In the drier inland regions, good progress is being made with the cultivation of grain sorghums, and a considerable increase in acreage is in prospect.

It is estimated that about 2,500 acres in the Callide and Dawson Valleys are under grain sorghums, chiefly Kalo and Day Milo. The crops which will be header-harvested will be used mainly as pig feed. Because of their value for this purpose, it is anticipated that the cropped acreage will be considerably increased. In the coastal districts, grain sorghum acreage is declining because of the ravages of the pink peach moth.

Wheat growing declined steeply in area sown under the influence, probably, of the uncertain marketing situation.

Experiment and seed selection work included tobacco seed beds; tobacco pure seed selection plots; tobacco seed propagation plots; grain sorghum and grain sorghum-maize trials; grain sorghum and saccharine sorghum pure seed plots; grain sorghum varietal trials in coastal areas; grain sorghum varietal trials (new introductions); a sweet potato varietal trial; a cow cane varietal trial; a lucerne trial; an oat hay varietal trial; an oat grain variety trial; a combined green fodder and grazing trial; an oat varietal observation trial; and winter green feed plots at Barcaldine. Results of all trials produced interesting and valuable data as aids in routine extension work throughout the Division.

MACKAY.

Only an aggregate of six inches of rain was recorded in the first half-year, while in the second half a total of 75 inches was registered. Consequently, conditions were not conducive to satisfactory crop production in the Mackay district. Heavy cyclonic storms caused a reduction in crop acreage. Since April, the situation has improved with more favourable weather, and good crops of tobacco have developed.

Unfavourable weather affected tobacco seedlings very seriously. This was very largely the reason for the greatly reduced acreage under tobacco throughout the district.

Tobacco varietal trials, varietal demonstrations, and fertilizer trials were included in the field work of the year. The general growth of the crops is healthy, but the acreage yield—between 500 and 700 lb.—will not reach the average. Leaf already harvested is bright in colour, but lacking in body. Good average prices were realised, however, for the leaf marketed up to the present time.

Success has attended pasture improvement trials in this district. Guided by results, farmers are giving greater attention to new pasture establishment, as well as to old pasture renovation.

A trial planting of 80 acres was made with Para Grass cuttings, the intention being, if successful, to extend the area under this grass. The method applied was the distribution of full-length runners on the ground surface and work them into the soil with a disc cultivator. Where the soil was moist this method was entirely satisfactory.

Other field trials included a sorghum-maize trial, a sorghum varietal trial, green oat fodder and grazing trials, and lucerne observational trials. All trials produced useful data for the guidance of farmers in different parts of the district.

NORTHERN DIVISION.

TOWNSVILLE.

Weather conditions were abnormal, varying from extreme dryness to torrential rains accompanying two severe cyclonic disturbances. Flood waters caused extensive damage to arable land, particularly in the Burdekin delta.

Abundant pastures was the general experience in the pastoral areas.

The tobacco crop was affected seriously by floods, and the resultant yield was light.

The cotton crop withstood the excessively wet conditions remarkably well, although yields were reduced by wind damage. Cotton prospects generally are good in this district, and a considerable increase in acreage has been planned for the coming season.

In the Ayr district the potato acreage is expected to exceed that of the previous year; remarkably good results have been obtained by improved planting methods and selecting good quality seed. Because of a remarkable freedom from disease, yields in this district are high. An average bagging of 4½ tons to the acre can be maintained. Yields up to 8 tons were obtained last season.

On suitable deep alluvial soils, lucerne has proved remarkably successful in this district.

Maize crops were excellent and grain yields were higher than 60 bushels to the acre in some localities.

Some varieties of onions have given promise, although the bulbs grown in the Townsville area have a tendency to grow beyond marketable size.

Pasture improvement is extending in practice, particularly on the coastal country, where introduced grasses are becoming well established.

Field experiment work progressed well throughout the year, especially where suitable seasonal conditions prevailed. Results of district potato trials indicate the probability of winter production increasing to the full capacity of market requirements in North Queensland. Fertilizer trials have given good results.

Other important field work included a cotton experiment; onion variety trials; a lucerne cultivation trial; and many grass experiment plots.

ATHERTON DISTRICT.

Seasonal conditions on the Atherton Tableland were unfavourable for high production, and although the rainfall was lower by 15 inches than that of the corresponding period in the previous year, the absence of bright sunny weather had a detrimental effect on crops and pastures.

The area under maize was approximately 28,500 acres, but a prolonged wet season reduced the yield considerably. The probable yield will be about 15,000 tons, as against an earlier estimate of 21,000 tons.

The peanut crop was similarly affected by weather conditions which made harvesting and curing operations very difficult.

Cowpea crops sown for green manuring and seed were less prolific in yield for the same reason.

In the dairying portions of the Tableland, especially in white grub-infested areas rankness in the pastures, reduced cream production below normal. The continuous "wet," however, permitted the establishment of winter fodder crops, also lucerne and clovers, of which excellent stands have been obtained.

A complete and varied programme of experimental work was conducted in association with the Tableland Experiments Committee, which included green manuring, fertilizing, maize spacing, seed treatment, fodder cropping, grazing, and pasture establishment trials.

The legume introduction work was continued, and some hundreds of legumes are now under trial. In addition, the grass and legume plots at Daintree were continued and observations made throughout the year.

In strong-growth competition with weeds and native grasses, a number of species of grasses and legumes have shown distinct promise. The most promising among them, especially in respect of palatability, are *Fine-stemmed Guinea Grass*, *Panicum coloratum* and *Brachiaria decumbens*. Of the legumes, *Stylosanthes guineensis* showed its capacity to withstand competition. It was very lightly grazed, however, probably because of the presence of Guinea Grass in the pasture and which is preferred by stock. Another very promising legume and for which stock show a marked preference is *Desmodium scarpiurus*, known locally as Samoan Clover and which, it is believed, was introduced by the earliest settlers and has since thrived along the alluvial flats of the Daintree River.

DIMBULAH.

Generally, the year was the most satisfactory for tobacco growers since the establishment of the settlement. Although the aggregate acreage yield did not equal the previous best, average prices at the early sales reached a high level and which has since been maintained. While the 1938-1939 season closed with a production, from 1,500 acres, of 658,000 lb. of leaf sold at an average price of 24.58d. per lb., it is estimated that the production of the current season will exceed 900,000 lb. of leaf from 1,750 acres, at a sales average of approximately 30d. per lb. Sales for this season's crop show the maintenance of a record high average price for leaf sold; also a record high price of 55d. per lb. was received on two occasions for bales of first-grade leaf. Clearances to date have been very good, and it is expected that a high percentage clearance will be affected for all tobacco produced for the season.

The number of active growers increased by 15, mostly share farmers, making a district total of 173.

A large area of seed-beds was planted during the mid-September-end-of-October period, and because of the complete swing to the use of a seedbed fertilizer recommended by the Department, the problem of primary importance in the previous season—"yellow patch"—was successfully surmounted. It was again observed that benzol controlled effectively and even killed blue mould in the seed-beds.

With the exception of the few irrigated crops in the district which were planted mainly in September, planting out commenced with the first storm in October and continued until the last week in December.

Pest attack was not serious. Leaf miners in isolated areas were probably the worst, while budworm, cutworm, wireworm, stem-borer, and cluster caterpillars were kept in check by rigid control measures. Mosaic affected several fields, while a stem rot—*Rhizoctonia Spp.*—was general.

Curing, with few exceptions, proceeded normally, although the season was excessively wet. A desire to catch the first sale led to the premature breaking of bulk in some cases. Tobacco leaf attains a mellowness with maturity and growers are advised to keep the leaf in bulk for at least a month, preferably for six weeks, before submitting it for sale.

An extensive programme of experiments and field trials was concluded in the course of the year. This work included:—

Seed-bed Experiments.—Rate of seed sowing; seed-bed fertilizing; and blue mould control.

Field Experiments.—Wheat and superphosphate manurial trial; peanut rotation trial; cultivation and fertilizing; source of nitrogen study; rate of seed sowing and spacing; varietal and fertilizing trial; and a fertilizer formula experiment.

Demonstrations.—Variety demonstrations (16); fertilizing (6); cultivation (3); soil erosion (3).

An immediate local problem is how can we bring old or fallowed land back to a state of fertility comparable to new or virgin land. Virgin land grows a better quality tobacco and gives a greater monetary return to the acre than old land which has remained out of use for up to five years after, say, three or four consecutive crops. New land cannot be always available. The best way of restoring fertility is by green manuring preferably with a suitable legume. Although unproved, it is considered that "Townsville Lucerne," a legume which is making a remarkable natural growth locally, may be of importance in this respect. Points in its favour are—(1) Natural habitat; (2) it re-establishes itself annually; (3) its tolerance, if not resistance, to nematodes; (4) it competes most strongly with weeds; (5) its creeping and matting habit of growth prevents erosion; (6) its excellent as a horse pasture; (7) its deep rooting habit with an abundance of nodules; (8) it matures at a favourable period; (9) it requires little or no attention by the tobacco grower; and (10) it is easy to eradicate, if necessary.

MAREEBA.

The greater proportion of seed-bed land at Mareeba this season was new land which had had no previous cultivation or cropping. The practice of heat sterilisation by burning wood or ant-bed on the surface of the soil is still general. A few growers use steam, while some insist on using unsterilised soil for seedling production. The use of the recommended seed-bed fertilizer mixture has increased, with a consequent decrease in the incidence of "yellow patch" and irregular stands of seedlings.

The advantage of winter rains in bringing the soil into a good condition for ploughing has not been under-estimated. Most areas received at least two good ploughings before hilling up for planting, and weed growth was held well in check during the period of enforced fallow. A number of growers cleared new land for the season's crop and, as the clearing was done fairly early, the land was brought into fair tilth before the planting season commenced. The area of new land available becomes less each year and, sooner or later, growers will be forced to adopt a system of crop rotation in order to continue production.

On the more general soil types—such as the red, brown, and grey sandy soils—the standard 4:10:6 fertilizer mixture remains in use at varying rates. On the grey alluvial soils the use of 2:15:4 mixture is gradually extending with beneficial results where applied. The application of fertilizers has been made usually before the crop was planted, although a few growers still prefer to make a side application after the plants have become established.

In the irrigation areas, the earliest plantings were made at Emerald Creek, where some growers commenced planting out towards the end of August, but the main plantings were made in October. Along the Barron River, the main plantings commenced in September and continued into October. There the stand on the whole was very poor, principally because of the poor seedlings available for planting. On the other hand, the initial stands in the Emerald Creek area were, with a few exceptions, very good, and there was promise of a record crop for the season.

In the dry farming areas the first plantings were made near the end of October, and the crops were established by hand watering. The main plantings were done during November and continued into December; more than half of the total area was planted out before the end of the calendar year. The remainder of the crop was planted out in the rainy period in January, while a very limited area was planted out as late as February. The November and December plantings in many parts of the district suffered from wireworm and cutworm attacks, which had the effect of producing an irregular stand. The early crops in these areas, despite the dry conditions which prevailed, made good growth with the slight storm rains, and during January grew very rapidly, and some had commenced to mature by the end of the month. The position at the end of January was most promising and crops in all stages were making excellent growth. The only crops which escaped cyclone damage were the latest plantings of limited acreage made early in February.

Blue mould made its appearance in many irrigated crops within the first few weeks after planting out, and was the cause of considerable irregularity in the stand. At later stages of growth the disease was present in some crops, but the damage was slight. In other crops throughout the district isolated outbreaks of the disease occurred but were of minor consequence. Frog-eye leafspot was more prevalent than in the previous season. The disease appeared in most areas during the February rains, and this excessive rainfall may reasonably be regarded as having been a contributory factor. Once again stem-rot was prevalent in irrigated and non-irrigated crops to a varying extent. Its presence was revealed more strikingly after the winds in February when many affected plants were broken off at ground level.

Harvesting commenced in the irrigation areas during December. Leaf matured at a steady rate, and no appreciable losses occurred through inability to handle available leaf. Harvesting was completed by the end of February and cures throughout were satisfactory, with the exception of a few of the cures made towards the end of the month.

The earliest of the non-irrigated crops had commenced to mature by the middle of January and some very good cures were obtained during that month. After the February rains, however, curing difficulties arose, and some serious losses were sustained. The greatest difficulty was the inability to dry out the leaf rapidly enough to prevent its going brown. Where growers were able to commence drying out at an earlier stage, the condition was rectified, although a few instances were noted where no improvement could be made by any alteration in the curing technique. In many areas considerable losses resulted from these unsatisfactory cures.

Greater attention has been paid to farm grading, especially in the irrigation areas, where growers have had ample time to prepare leaf for sale at the first auction. In other parts, the desire of growers to have some of their leaf submitted for the first sale has forced them to forward leaf to one or other of the grading sheds. It has been estimated that, approximately, half of the leaf has been graded on the farms during the past season.

The position with respect to farm grading has been quite satisfactory although labour for this purpose has been a limiting factor. Generally, the standard of farm grading has been quite satisfactory and the work conscientiously done. Obviously, there is still room for improvement, and growers would do well to pay greater attention to leaf size and texture. There still remains the tendency to include slightly green leaf in the ordinary grading, and the folly of this practice cannot be over-emphasised.

Making due allowance for areas which were abandoned before all leaf had been harvested, the total effective acreage yielding saleable leaf has been approximately 1,750 acres. It has been estimated that the total production will have been approximately 475 short tons. Already 219 short tons have been sold for a gross return of £51,199 at an average price of 2s. 4.4d. There has been a definite improvement in prices for leaf in the sales so far conducted, and growers are well satisfied with the results. On this basis there is little doubt that the previous season's output will be exceeded both in respect of quantity and gross value of leaf produced, although it must be realised that an increase in acreage has been the cause of this general increase in production.

Despite adverse conditions during the season, production has increased, and nothing but satisfaction can be felt at the outcome of the season's activities. Older growers are gradually become more firmly established in the industry, and at the same time there has been a slow increase in the numbers engaged in tobacco growing. The industry is slowly but surely becoming stabilised.

It is expected that the area to be planted in the coming season will exceed any previous acreage.

REPORT OF THE DIRECTOR OF COTTON CULTURE.

The cotton-growing industry experienced irregular climatic conditions during the year, some districts having mostly unfavourable seasonal conditions, while others had reasonably good conditions for the production of satisfactory yields. Crops in the far northern areas were seriously retarded by three cyclonic visitations. In the Central district crop development was severely handicapped, first through delayed planting rains preventing planting of most areas until the end of November and early December, and then through the occurrence of a prolonged dry, hot period in January in which record maximum temperatures were recorded. In the Burnett and Southern districts fairly satisfactory seasonal conditions were encountered, except that the early planting rains tended to be rather scattered, which resulted in a considerable acreage not being planted until late November. The combination of uncertainty regarding the future policy of the Commonwealth Government relating to cotton bounties, and the lateness of the planting rains, caused a serious reduction in acreage planted to cotton. Altogether 2,076 growers reported to the Queensland Cotton Board that 40,962 acres produced cotton.

Yields.—The adverse seasonal conditions experienced in the Northern and Central districts seriously reduced the yields of many crops in those areas, and, as the bulk of the acreage was planted in them, a marked decline in production from the previous crop of 12,447 bales resulted, the total yield at the thirtieth of June being only 5,661 bales. Many of the late planted crops remain to be harvested, but it is not anticipated that the total production will exceed 8,500 bales.

Australian Spinning Requirements.—The development of the cotton-spinning and manufacturing industries has made further very marked progress during the season, the estimated consumption of raw cotton for the twelve months being approximately 60,000 bales. The production of a small crop of Queensland cotton has thus necessitated the spinners importing most of their requirements, the better qualities coming from America and the cheaper cottons from India.

New Cotton Bounty.—Towards the end of the crop year the Commonwealth Government, following representations made by the Queensland Government and the Queensland Cotton Board, announced a renewal of the payment of bounties on raw cotton for a period of five years. In order to stimulate a marked increase in production of cotton, the rates of bounty for the next two seasons were increased above the ruling rate for this season's crop. The rates for the five-year period, when the spot price of American Middling cotton in Liverpool is 6d. sterling per lb. of raw cotton, are as follows:—

Season—	Raw Cotton.
1940-41	Per lb.
1941-42	4-75d.
1942-43	4-50d.
1943-44	4-25d.
1944-45	4-00d.
1944-45	3-50d.

For the two lowest grades of raw cotton the rates have been reduced by 50 per cent.

Grading.—The grading and stapling of the cotton crop has again been carried out in both the seed cotton and raw cotton by officers of the Department of Agriculture and Stock. Because of the absence of rains over most of the cotton-growing districts during the harvesting period, the grade of much of the cotton received has been superior to that of the previous crop, particularly during the latter part of the season.

Irrigation of Cotton.—The programme of investigations in cotton growing conducted during the season included the establishment of experimental areas in the South and Central

Burnett districts for the purpose of determining the merits of growing cotton under conditions of supplementary irrigation. Advisory assistance was given to growers in the Gayndah and Callide Valley districts, who grew cotton under supplementary spray irrigation facilities. The results obtained were in marked contrast to those realised in cotton grown under rainfall alone, and appear to indicate that farmers should give careful consideration to installing irrigation facilities for cotton growing where the same can be economically accomplished.

Biloela Research Station.—A comprehensive programme of investigations embodying amplifications of results obtained in recent seasons, as well as the routine operations relating to varietal testing, rotational croppings, soil moisture, and nitrate determinations, was carried out at the Research Station. The difficult climatic conditions seriously handicapped much of the work, but afforded an excellent opportunity to test methods aiming at improving yields under conditions of very late planting and irregular rainfall.

Once again the value of growing cotton in the first or second year after the breaking up of either virgin grassland, or old-established Rhodes grass on forest alluvial country, was demonstrated. Gains in yields of as much as 200 per cent. in favour of a planting in the second year of cultivation of virgin grassland were obtained in end of November plantings of several varieties. Undoubtedly farmers should practise the cotton-grassland rotation, for in most seasons beneficial results have been obtained at the Research Station, where cotton has been planted in the first two seasons of cultivation after grassland.

Pure Seed.—Further satisfactory progress was made in developing stocks of seed of the most promising varieties, and it is now possible to meet all likely demands for varieties capable of producing cotton of the types required by the Australian spinners. The outstanding varietal performance this season has been that of Oklahoma Triumph. This variety has been under trial during several seasons, and the results obtained have indicated that it can produce heavily under good seasonal conditions and very satisfactorily in an irregular season even when planted late in November. Considerable improvement as regards boll types is required in it, but very good progress has been made in this respect, as is reported under the plant-breeding operations of the Division of Plant Industry (Research).

Insect Pests.—Generally, insect pests did very little damage to cotton crops in the main cotton-growing districts during the first half of the season. Isolated cases were reported of destruction of stand-by locusts and some loss of plant terminals resulting from the depredations of the rough boll worm (*Earias huegeli* Rozenk). From February onwards, however, the corn ear worm (*Heliothus obsoleta* Fabr.) caused rather severe damage to the late-planted crops in sections of the Central Division and in scattered areas in the Burnett districts. Loopers were more noticeable than usual, especially in the Theodore and Callide Valley districts, where isolated areas of cotton were completely defoliated, which in some instances caused premature opening of the crop. Following the heavy March rains, moderate infestations of jassid developed in the softwood scrub areas of several districts and caused considerable reduction in yields in the late-sown crops. Altogether, however, insect pests did not cause as much loss of crop as might have been expected in a season of such general late planting, except in the far Northern districts, where crop returns were seriously lowered by various pests.

W. G. WELLS,

Director of Cotton Culture and Senior Research Officer.

REPORT OF THE DIRECTOR OF FRUIT CULTURE.

The Fruit Branch had the busiest year since its inauguration. Because of enlistments in the Royal Australian Air Force and in the Australian Imperial Force many extra duties were imposed on the remaining members of the Field Staff, and which were accepted cheerfully and performed efficiently.

Conditions generally were favourable to fruit and vegetable growers throughout the State. Late winter rains ensured a good early spring, and, although this was followed by a dry spell, timely summer rains prevented any extensive crop damage.

Hail, cyclones, and heat waves took toll in some localities, but, on the whole, returns were good and better prices compensated for losses where they did occur.

FIELD EXPERIMENTS.

Dates.—The experiment plot of varieties in the Central-West has continued to progress, and several of the more advanced palms produced small bunches of fruit. Additional plants were set out during the late winter. These consisted of several varieties grown from seed selected from Californian dates.

At Rayford Park, in the Miles district, a second trial plot is growing well. Some of the palms at two years are more than 4 feet high. Several hundred seedlings of the Egyptian variety, Hayyani, were distributed to various parts of the State. This variety is likely to prove hardy and successful under Queensland conditions.

Avocado.—Investigations into the blossoming habits of avocados have been completed and recorded. Varietal observations are being continued to confirm the data already in hand, and a stage has been reached permitting of the compilation of an illustrated cultural pamphlet for the guidance of intending planters. Propagation work is still in hand, and seedling stocks of Guatemalan varieties have been planted for experiment work in the Woombye, Mapleton, and Redlands districts. The grafting of selected varieties will be completed as budwood becomes available.

Tomatoes.—A new programme of investigational work has been commenced in the Redlands district with the primary objects of—

- (a) Reducing cost of production by determination of correct fertilizer formulae;
- (b) Ensuring earlier maturity of fruit.

Soil analyses from about forty farms on which vegetable production has been continued for many years showed an accumulation of excessive amounts of phosphoric acid and potash, due to continued applications of large amounts of fertilizer to successive crops. Nitrogen and humus were shown to be only fair. These results indicated that, for a time, further applications of phosphoric acid and potash to crops would probably be uneconomic, and experiments have therefore been undertaken with tomatoes, to which nitrogen only has been applied. The experiments already indicate that the nitrogen plots will yield results at least equal to those to which complete fertilizers have been applied. A second experiment has been laid down on virgin land to determine the optimum requirement of phosphoric acid in fertilizer mixtures for tomatoes. This has necessitated the use of a number of plots in which the nitrogen and potash have been kept constant, while varying levels of phosphoric acid have been included.

In respect of earlier maturity and greater acreage production, variations of seed-bed practice are being tried. It seems likely that the inducement of a second rooting system in young seedlings will tend to build up more vigorous plants and, consequently, heavier crops, while the process may also induce earlier maturity.

Analyses have revealed a lack of humus in red soils which have been under cultivation for many years. To demonstrate the value of growing alternate cover crops for ploughing in, land has been prepared for the planting of spring crops.

Seed selection is of the utmost importance to tomato growers. The plants are very susceptible to many diseases, some of which are seed-borne. To produce sufficient disease-free seed of the main varieties to form the nucleus of supplies from which growers will be able to grow their own seed requirements, land has been prepared at the departmental experiment station at Moggill. Selection of improved types also will be made in conjunction with the selection of disease-free seed.

Grapes.—In the Stanthorpe district an experiment consisting of the application of varying amounts of boron to the soil was conducted in co-operation with the Research Division in an effort to eliminate a common fault known as "hen and chickens" in bunches of the valuable Waltham Cross variety. Analyses, so far, have shown a definite improvement as a result of the boron applications.

In the Pinkenba-Nudgee district the phylloxera-resistant root stock experiments are being continued. Vignerons in this area are progressively adopting the practice of grafting their vines on resistant stocks.

The district of Charters Towers possesses excellent conditions for vine growing. Varietal and other experiments have been commenced in the Stanthorpe district.

Citrus.—The Robertson Navel orange trees imported from California have made some progress.

In the Central-Western district, arrangements have been made to establish citrus experiment and demonstration plots at the Barcaldine and Blackall State schools.

At Gayndah, field trials with green manure crops were undertaken on a small scale, the experiments consisting of plots of barley, field pea, and New Zealand blue lupin for comparative purposes. The latter crop was outstanding, confirming previous opinion.

Pineapples.—Supervision of demonstration plots at various centres on the North and South Coasts has been continued on behalf of the Research Division.

In the Cairns district a new experiment plot was laid down in September to test modified planting methods for heavy rainfall districts, and also the use of ground cover crops to control soil erosion. Wild lucerne, *Stylosanthes sunaica*, was chosen as the cover for the trial because of its dense matting, low-growing, and deep-rooting habit.

Passion Fruit.—Cross-breeding work is being done at Bowen with *Passiflora edulis*, the common purple-fruited passion fruit, and *Passiflora incarnata*, a hard-shelled, yellow variety, which grows and bears profusely in North Queensland and which is more or less resistant to common passion-vine diseases. The object of this work is to produce a variety with the good characteristics of *P. edulis*, but which is more disease-resistant than that variety. A small plantation containing ninety hybrids has been planted at Bowen.

At South Johnstone Experiment Station, trials and observations are being made of the habits of two varieties of *P. edulis*, viz., *flavicarpa* and *Giant*, in addition to *P. maliformis*, *P. laurifolia*, *P. incarnata*, *P. seemani*, and *P. ligularis*. The large fruiting *Passifloras*, commonly known as granadillas, also have received attention.

Mangoes.—Considerable progress has been made with mango root stock experiments. An orchard of trees on selected and recorded stocks has been planted at the Oonoomba Animal Health Station, near Townsville, and includes also several grafted trees imported from Java. At South Johnstone, mango work has been restricted to the raising of nursery stocks and

the budding of these with selected varieties. Efforts have been made to raise budded trees of all the best North Queensland varieties.

KAMERUNGA HORTICULTURAL EXPERIMENT STATION.

Because of conditions more favourable to the growth of experiment fruit trees than at South Johnstone, an area of 5 acres of land, part of the former Kamerunga State Nursery at Redlynch, has been resumed. A plot of selected mango varieties has already been planted. Later, a citrus stock trial will be commenced to ascertain the most suitable root stock for oranges and mandarins under Northern conditions. Passion fruit and papaw investigational work also are planned.

Citrus Budwood.—In the past some difficulty has been experienced by nurserymen in the safe storage of budwood selected from trees in the dormant stage until required for use. To assist them, experiments were undertaken, and it was found that by storing budwood in layers of damp peat moss the wood could be held without sign of deterioration for over nine weeks.

DECIDUOUS FRUITS.

Fruit, also vegetables, from the Stanthorpe district marketed during the season amounted to 20,000 tons, which compared favourably with the previous year. Apple-growers were fortunate in being able to export 28,000 bushels overseas.

Growers of grapes, peaches, plums, and apricots marketed light crops, but the quality was excellent and prices were the best for many years. Tomatoes and beans sold exceptionally well, and about 160,000 cases of tomatoes were marketed in Sydney, where quality and the excellence of the pack gained favourable comment.

Losses from pests were not serious. Fruit fly was less in evidence than usual. In respect of codling moth control, radio and local Press were used to keep growers informed from time to time of the peak periods when infestation was likely to be most serious. These timely warnings enabled precautionary measures against attack to be promptly applied. By observations at check points throughout the district, the most likely times of possible damage were usually accurately predicted.

BANANAS.

Banana-growers in Queensland now number 2,326, cultivating an aggregate area of 10,829 acres, of which 8,606 acres are in bearing. The total production for the year was approximately 550,000 cases, an average of sixty-three to the acre. The following table indicates the distribution of production:—

District.	Number of Growers.	Number of Acres.
Cairns	60	190
Bowen	49	205
Rockhampton	90	548
Gympie	342	988
Pomona	231	867
Yandina	243	808
Nambour	339	1,470
Woodford	109	954
Dayboro	108	688
Metropolitan	223	520
Beenleigh	267	1,602
Southport	110	736
Curumbin-Tallebudgera	155	1,752

The market, except for short glut periods, has been buoyant. While at one time only Cavendish types were regarded as suitable for general cultivation, the marketing in Sydney of other varieties is now receiving added attention with good results.

CITRUS FRUITS.

Production is expanding as a result of the efforts of the Department to improve varieties and cultural methods.

Around Gayndah the industry has expanded in ten years from a production of 3,500 bushels to 70,000 bushels, valued at approximately £39,000.

Renovation of North Coast orchards is still proceeding. Many comparatively new plantings are now in bearing, and production henceforward should show an annual increase. The present production of about 60,000 bushels may soon be doubled.

The Howard-Burrum district produced between 50,000 and 60,000 bushels.

In the Lockyer and other sub-districts below the Main Range production is increasing slightly and fruit of excellent quality is grown.

In past years thousands of citrus trees were imported annually, but now, through the work of the Fruit Branch, the standard of nursery stock has been so improved that, instead of importing trees, Queensland last year exported some thousands of trees to other parts of the Commonwealth, and also to other countries.

PINEAPPLES.

Returns for fresh fruit have been satisfactory, and the price of cannery pineapples has increased.

Growers are becoming increasingly conscious of the advantages of correct packing and marketing.

Through the combined efforts of the Fruit Branch and the Sub-Department of Forestry, the manufacture of woodwool has become a firmly established industry.

GENERAL.

During the last session of Parliament *The Fruit and Vegetables Acts* were amended to control the sale of dried fruits in Queensland. Draft regulations to give effect to the amended measures have since been framed.

The Board appointed under *The Banana Industry Protection Acts* continued the exercise of its advisory authority in the interests of the industry. The previous year's policy governing the planting of new plantations was again adopted and gave general satisfaction. The rate of levy for administrative purposes also was retained. It is important to note

that the incidence of bunchy top has been well controlled, and, although it cannot be stated that the disease is less prevalent, there has at least been no increase.

Tropical fruit culture and vegetable growing has expanded in the Central Division.

Around Bowen, growers had one of the best seasons financially, but cyclonic devastation offset other benefits. Pineapple and mango production has increased substantially.

In the Northern Division, cyclonic disturbances caused serious losses. On the other hand, orchardists are already gaining the benefit of improved cultural practices. To these are added practice of irrigation where practicable.

A collection of numerous tropical fruit seedlings has been supplied to the Cairns City Council for planting in its botanic gardens. This arrangement will have an additional practical benefit as a conveniently situated, observational, and instructional plantation.

On the Darling Downs and further west, fruitgrowing, especially of citrus varieties and grapes, is expanding rapidly.

H. BARNES, Director of Fruit Culture.

REPORT OF THE DIRECTOR OF DAIRYING.

Seasonal conditions were satisfactory in most of the dairying districts, but a dry winter caused a reduction in output of about 10 per cent. below the record figures for the previous year.

Although dairy production decreased in comparison with that of the previous season, the total return of £9,000,000 was only 8 per cent. lower, and was the second highest on record.

After the outbreak of war, the Commonwealth Government entered into a contract with the British Government for the purchase of the whole of Australia's exportable surplus of dairy products. The return to butter factories averaged 72s. 6d. a box under the equalisation scheme; this was 2s. 6d. a box more than in 1938-39, and was the highest for ten years.

For the first time a Queensland factory—Nanango—was successful in winning the Australian butter championship.

Interest in fodder crops and pasture improvement has broadened appreciably.

Butter quality was maintained at practically the same standard as that of the previous year. Regular bacteriological and chemical examination of butter produced in every factory was initiated, and is expected to result in uniformity and quality of the product. Improved equipment and facilities, higher efficiency, and better quality production are reported in the cheese industry.

The use of steam sterilisation on farms operating milking machines has extended throughout the dairying districts.

BUTTER PRODUCTION.

Butter production for the year was 139,795,042 lb. The following table shows the monthly out-turn.

1939—	Lb.
July	8,869,106
August	8,929,594
September	9,459,830
October	9,924,809
November	10,087,251
December	13,517,047
1940—	
January	16,091,938
February	16,006,096
March	16,425,946
April	13,461,247
May	9,662,341
June	7,359,537
Total	139,795,042

Approximately 72.6 per cent. of the butter output was exported—mostly to Great Britain—and approximately 4 per cent. was sold interstate.

CHEESE PRODUCTION.

The production of cheese was 13,841,405 lb. for the year. An improvement in quality, particularly in that of first-grade, has been shown.

The following table shows the monthly output.

1939—	Lb.
July	1,114,605
August	1,243,079
September	1,333,460
October	1,312,463
November	1,079,217
December	1,341,782
1940—	
January	1,307,512
February	1,106,218
March	1,208,531
April	995,554
May	867,352
June	931,632
Total	13,841,405

Railway freight rebates allowed to dairy farmers who purchase young bulls with dams qualified for entry in advanced registers were continued.

The number of animals recorded on a pure-bred production basis has increased. There was a slight decrease in the number of herds submitted for testing.

The average yield of butter-fat produced is computed to be 160 lb., which is the same as that of last year.

The average yield of milk recorded is also very close to that of last year—3,729 lb. (1938-39, 3,757 lb.).

Lactation records were computed for 5,249 cows. The highest yield recorded for an individual cow was 461 lb. of butter-fat for a 273 days' lactation. This cow comes from a Darling Downs herd, of which the average production is 269 lb. butter-fat per cow. Another yield of note was the production by a cow in a Darling Downs herd of 11,569 lb. milk, an average daily yield of 42 lb. during lactation under ordinary dairy farm conditions, without the feeding of concentrates. Five years ago this same cow was credited with a yield of 9,185 lb. of milk, yielding 363 lb. butter-fat. Its owner has practised herd recording for many years. Herds were submitted from practically every dairying district.

Cream transport was a subject of close attention during the year, and much information in relation to the re-gazettal of routes on the basis provided for in amended legislation has been assembled. At practically every dairy centre northwards to Rockhampton meetings of farmers have been addressed on cream transport, and on the economics of the dairy industry generally.

A survey of factory accounts revealed that the costs and the pay to suppliers were maintained at the same rates as in the previous year. Based on all grades over all factories operating in Queensland the average rate per lb. was 13.51d. A complete record of the operations of each butter factory has been compiled and supplied to the factories and also published.

DAIRY RESEARCH.

A new butter-testing laboratory at Hamilton is an indication of the gradual expansion of dairy research. Three laboratories—Brisbane, Hamilton, and Toowoomba—are now in operation.

Milk and cream troubles have been investigated on many farms, and samples examined to discover causes of defects in these products. Whenever possible, laboratory tests are correlated with existing farm conditions. The Brisbane milk supply and the milk depots controlled by the Brisbane Milk Board have been examined regularly. Suppliers of "warm milk" have received assistance, both in respect of farm visits and laboratory service.

Laboratory officers have assisted in assessing the efficiency and suitability of steam sterilisers, which are not recommended until a satisfactory demonstration under practical conditions is given. Comparative milking tests have shown that, when properly applied, steam sterilisation gives excellent results and facilitates the production of more hygienic and better keeping quality dairy products on the farm.

Cream supplies have been investigated at farms and surveys of manufacturing methods and bacteriological condition of factories made. Samples of butter have been examined in the laboratories following discovery of defects by graders.

The butter standardisation service to factories, terminated during the year, has been replaced by the butter improvement service, which is being extended to every Queensland factory.

To cope expeditiously with the work involved, a new butter testing laboratory has been established at Hamilton. Already good results have been achieved and improvements in quality and composition of butter effected. Many tests already conducted show that the quality of butter placed on the Brisbane market by the Queensland Butter Board is of a very high standard.

The cheese improvement campaign has been continued, and the three technical officers working from Toowoomba have rendered valuable assistance to both suppliers and factories.

Samples of water from butter and cheese factories and dairy farms have been examined, and visits to the sources of supply have been made to assess their suitability for dairy purposes or to discover whether they have been responsible for defects noticed in dairy products. Laboratory tests have shown that water from dams, swamps, and even tanks is still a source of trouble in respect of milk and cream quality.

PIG INDUSTRY.

The export trade in pig products has opened up new and expanding markets, and future activities will be linked more closely with oversea shipments to a much greater extent than hitherto. Instructional work has, in consequence, been directed more particularly to the attainment of the desired export standards. The recently inaugurated system of carcass appraisal has produced a marked improvement in export quality.

Pig production in Queensland has trebled in comparison with the figures of twenty years ago. Bacon factory and meat-works slaughterings have increased proportionately. In annual value present production approximates £A1,500,000.

Stud pig breeding has increased largely to the general benefit of the pig industry. North of Mackay, particularly on the Atherton Tableland, pig raising is increasing rapidly in importance.

The initiation of a community boar scheme, under which pedigreed animals are made available for service at a small fee, although still in its trial stage, has already proved its worth.

Pig feeding experiments are now in progress, and results are already an indication of substantial benefit to pig husbandry in this State.

The Queenstate Stud (established by the Department in 1937 and maintained at the Queensland Agricultural College at Lawes) is already an important influence in the progress of the pig industry in Queensland. The foundation stock were specially selected pedigree pigs—Berkshires and Middle Whites of both sexes—imported from Great Britain. Recent additions have been made from the best Victorian herds.

The progeny of the foundation stock have been distributed widely within the State. By this regular dispersal of stud animals, commercial breeders have additional opportunities of infusing new blood into their herds.

The transfer of the stud Berkshires and Large Whites to the College Stud, which now consists of Berkshires and Large Whites of both Canadian and British types, has been approved, the Queenstate Stud continuing with Middle Whites and Tamworths. These animals are all of the very best strains obtainable, and have been selected specially for Queensland conditions and should be of immense value to the State. The Berkshire sow, "Highfield Princess Royal," won Reserve Championship at the R.N.A. Exhibition, Brisbane, 1939 and 1940. The Middle White boar, "Queenstate Corona 2nd" (a son of the imported sire), won Championship 1939 and 1940, and in addition the silver medal presented by the National Pig Breeders' Association, England. The College herd carries many prize winners. Of the Middle White pigs exhibited at the Brisbane Exhibition 80 per cent. were of these imported strains.

Prices to farmers are reasonable, and for their convenience crates are loaned for conveyance of the animals to the farms of the purchasers.

E. B. RICE, Acting Director of Dairying.

REPORT OF THE DIRECTOR OF VETERINARY SERVICES.

The appointment of Director of Veterinary Services was made on 1st June last; thus responsibility for all veterinary services has been assumed for only a small period of the year.

The animal health stations have continued to function as heretofore—i.e., as centres for diagnosis, research, and advice on animal disease, and the supply of products (vaccines, &c.) for combating it. In addition, the Director of the Animal Health Station at Oonoonba has directed all disease control measures undertaken in North Queensland.

Field veterinary officers have engaged in investigation of disease and tuberculin testing, and have given much advice to stockowners.

SPECIAL PROBLEMS.

Tick Fever.—A large number of bleeders and a large quantity of blood has been supplied for immunisation of stock in the field, while many stud animals going to tick-infested districts have been immunised at the animal health stations. The present system of immunisation is giving good results and might well be availed of further, particularly by stockowners intending to send susceptible stock to districts where they are liable to contract this disease. To facilitate the availability of blood in certain districts, bleeders have been located in two country centres.

Contagious Bovine Pleuro-Pneumonia.—Twenty-six outbreaks of this disease were reported. There is evidence, however, that the disease has a much stronger hold, but it is being kept in control on stations by systematic vaccination. Cattle from such properties are liable to develop the disease when subjected to the stress of travelling, the animals contracting it from carriers in the mob. Greater use still could be made of vaccine—and doubtless will be—but it is emphasised that the practice of inoculating cattle and then putting them on the road before they have attained immunity should be avoided.

Tuberculin Testing.—This is being undertaken to an even greater extent than heretofore, and the practice of testing and eliminating reacting dairy cows from properties from which pigs have been condemned for tuberculosis is found to so reduce the disease that later pig condemnations are negligible. Nevertheless, on such a property the disease is liable to build up again unless periodical testing is undertaken and a tubercle-free state of the dairy herd is reached. Many owners are now doing this and many more could, with considerable advantage to themselves. A series of most important investigations into a newer product for testing for tuberculosis has been undertaken.

Abortion and Sterility.—Some progress is being made in the control of abortion by blood testing, but, unfortunately, they both remain serious scourges of the dairying industry. Assistance in controlling sterility is largely a matter of examination of animals and demonstration of treatment by a veterinary officer, followed up by conscientious application of the latter by the owner.

Parasitic Diseases.—Apart from routine and research work, the only one calling for mention is buffalo fly. This parasite has now been present in the Gulf country for upwards of ten years, the infested country remaining substantially the same since 1932, with some yearly variations. During 1939, however, the conditions in the "dry" season were such that the fly was able to persist in the eastern part of the area until the following "wet" season. Little wonder that when an abnormally wet season ensued it spread, the conditions then being particularly favourable for its breeding, and the fly extending from property to property, solely by its power of flight from one beast to another. Fortunately, this was anticipated and action taken to prevent its further spread by stock movements at the commencement of the ensuing dry season.

Action taken:—

- (a) Proposed plans for future control means were carefully reviewed at a conference of Commonwealth, New South Wales, and Victorian veterinary authorities with responsible officers in Queensland;
- (b) A further "quarantine" line was gazetted and movements of stock from within it carefully controlled. Infested cattle leaving the area have been sprayed at Kajabbi;
- (c) Scientific studies designed to assist in future control initiated in the area, and, in addition, further investigations at Yeerongpilly;
- (d) Extra officers located in the area so that the fullest possible control could be assumed.

A survey of the limits reached by the fly during the past season has been concluded, and this shows that the parasite has spread fairly extensively during the past wet season, but that this spread has occurred only in directions anticipated, and in no case to parts outside the quarantine area. Unfortunately, as anticipated, one of the directions in which it has spread has been that in which there is likely to be the greatest difficulty in control, and where conditions for its persistence are particularly favourable. While, therefore, the position is safeguarded at the moment, it is to be hoped that seasonal conditions will be such that the parasite will retrogress before another season favourable for its spread is experienced.

Although this parasite may seem to cause little effect on station cattle in the area, it must be remembered that the infestations are in general very much less than those that can occur, and that if the parasite were to get to the closely-settled dairying districts of the eastern seaboard it would cause infinitely more serious effects.

Coastal Fattening.—Observations have now been concluded and these have shown that cattle brought from inland areas can be satisfactorily fattened on the grasslands of the coastal wet belt. Particularly pleasing during the past year has been the good results obtained with comparatively young stock, one and two year old steers, taken to this area.

Poison Plants.—The committee previously mentioned exists to co-ordinate work undertaken by various departmental officers and certain members of the staff of the Queensland University. This has resulted in much useful work being accomplished, providing a very substantial return from the subsidy furnished by the Australian Wool Board, and clarifying knowledge on suspected plants.

H. R. SEDDON,
Director of Veterinary Services.

STAFF REPORTS.

ANIMAL HEALTH STATION, YEERONGPILLY.

The subjoined table shows the distribution of the more important products of the station in the course of the year; also the distribution of the previous year for comparison:—

	1938-39.	1939-40.
Mammitis vaccine	31,675	31,210
Calf pneumonia vaccine	475	1,665
Pleuro-pneumonia contagious vaccine	88,925	123,175
Specimens submitted for examination	5,226	7,202
Specimens blood submitted for contagious abortion test	4,191	5,515

Tick Fever Inoculation.—During the year over 6,000 doses of blood for tick-fever inoculation were despatched to stock-owners. Added to this should be the enormous amount of blood obtained from privately-owned bleeders.

Acaprin as a cure for tick fever is becoming more widely known, but because of restriction of supplies sales for the year show a substantial drop.

Poison Plants.—Work on a number of poison plants was continued by arrangement with the Poison Plants Committee of the Department. Among the plants tested were:—

Pimelia tetrastachya (broom bush), common in the Surat and St. George districts. Found to be poisonous, but the plant is not very attractive or nutritious, and it does not seem likely that it is eaten in any great quantity in the ordinary way. Perhaps, in times of drought or when sheep have been starved it may be eaten in sufficient amount to cause serious death.

Ipomea calobra (weir vine), a plant suspected for some years in the Roma and St. George districts, has been tested with negative results.

Gastrolabium grandiflorum (heart leaf) also has been tested and found to be very poisonous. Amounts of half a pound have been found sufficient to kill adult sheep in less than twenty-four hours.

Investigations with other plants are proceeding. Much valuable information regarding the poisonous qualities of many plants throughout the State have been collected during the last three years.

ENTOMOLOGY AND PARASITOLOGY.

The Cattle Poisoning Sawfly (*Platypsecta interruptus*).—So far there are no indications that fatalities among cattle through ingestion of sawfly larvæ are to be expected this year.

It has always been considered that this sawfly had a more extensive distribution throughout the State than that indicated solely through its association with fatalities among cattle in the Maranoa, Leichhardt, and Warrego districts. Recent information received has now shown that during May of this year adults, eggs, and larvæ (mainly half-grown) were very numerous in the Amara district, 30 miles west of Maryborough. During March and April adults, eggs and larvæ were also frequent at Barakula, 30 miles west of Chinchilla.

At Amara, eggs and larvæ were present on narrow-leaf ironbark and grey ironbark.

Although many of the trees at Amara were so heavily attacked as to be wholly or partly defoliated there were, apparently, no indications that cattle are in any way attracted to the larvæ in this district.

The undermentioned animal parasites were subjects of investigation at Yeerongpilly in the course of the year:—Cattle lice; sheep lice; horse bot flies; fleas; scrub tick; brown dog tick; sheep blowflies; buffalo fly; worms in cattle, sheep, pigs, poultry, and dogs.

FIELD WORK.

1. Tuberculin Tests.—

Number of tests applied	7,006
Positive reactions	554

These can be divided into—

(a) Double intradermal old tuberculin—

Number of tests	1,092
Positive reactions	84

(b) Single intradermal synthetic medium tuberculin—

Number of tests	5,914
Positive reactions	470

All the positive reactors were slaughtered, the majority under supervision at an abattoir.

Post-mortem examinations gave the following approximate figures:—

	Per Cent.
Generalised cases	15
Localised cases	80
No visible lesions	5

Practically all the tests were carried out at the owners' requests following pig condemnations. There have been no pig condemnations at any property, subsequent to the first test of the dairy herd with slaughter of positive reactors.

The procedure aimed at is to retest herds until no positive reactions are obtained. In heavily infected herds retests at intervals of three months are attempted, and, in herds with lighter infections, six months.

2. Tuberculin Trials.—Further trials were carried out with various synthetic medium tuberculins, testing critically the behaviour of tuberculous and non-tuberculous animals to the various tuberculins, with the object of obtaining the product most suitable for single intradermal tests in the work of tuberculosis eradication. Much valuable data has been obtained, and the work is proceeding as further batches of synthetic medium tuberculins are made available.

3. Disease Investigations.—Investigations have been undertaken following the receipt of reports from owners or stock inspectors. Mortalities investigated have been chiefly due to—

- Tick fevers;
- Arsenical poisoning;
- Plant poisoning, including fodder crops;
- Malnutrition.

All these investigations have concerned dairy cattle, and were only of occasional occurrence.

In the Rockhampton District, the year's work included:—

1. Tuberculin Testing.—

Test.	No. Tested.	Reactors.	Per Cent.
Initial test of herd	1,596	42	2.6
Second test of herd	279	2	0.7
Subsequent tests	274	2	0.7

In all cases, except those tests very recently completed, all reactors were slaughtered under ordinary meat inspection conditions, and during the year no "non-lesion" reactors were encountered. Three reactors were killed on the farm, and all had lesions.

2. Tuberculosis.—Numerous cases where tuberculosis had been found in pigs and cattle slaughtered for local consumption were followed up with personal inspections of the farms concerned, and advice tendered regarding means of control. Some of these visits led to the application of the tuberculin test.

3. Contagious Abortion (Bovine).—Clinical evidence indicates that contagious abortion is widespread in dairy herds of Central Queensland. A number of herds were inspected and samples from 140 animals submitted for agglutination test.

4. Redwater.—Ten outbreaks of redwater were investigated personally by the District Veterinary Officer, and in all cases babesiosis was diagnosed microscopically. Many more outbreaks were dealt with by verbal and written consultation and probably many more occurred which were not reported, or even observed. It would be impossible in such circumstances to give any indication as to the mortality rate.

Inoculations against redwater are practised more or less indiscriminately, some blood being procured from Yeerongpilly in addition to much "local" blood from uncontrolled bleeders.

Tick infestation in most parts has been exceptionally heavy throughout the greater portion of the year and tick worry in some neglected herds was observed.

5. Mammitis.—Eleven outbreaks of contagious mammitis in dairy cattle were investigated and active control measures instituted.

Autogenous vaccines have been used in many cases with satisfactory results, although vaccines are only successful where proper management is combined as a control measure.

6. *Contagious Pleuro-pneumonia*.—Two outbreaks were personally investigated and appropriate measures taken. Private discussion with graziers indicates that minor outbreaks are common throughout Central Queensland, although prompt and general inoculations prevent the outbreaks from becoming widespread.

General inoculation is now a practice on most cattle stations, and losses are mostly confined to cattle brought into the area.

7. *Blackleg*.—Two outbreaks of blackleg were actually investigated and many inquiries dealt with. Most of Central Queensland is "blackleg country" and heavy losses are frequently reported.

8. *Sterility*.—This is still a very widespread complaint in dairy herds and is encountered in various forms on most farms. Vaginitis is considered to be the cause of the vast majority of cases of temporary sterility, although the incidence of this disease has been noted as considerably reduced compared with previous years. The zinc sulphate treatment has met with good economic results where applied according to directions. Although it will not eradicate the disease, it solves the immediate problem of sterility in most cases.

9. *Footrot*.—Footrot is widespread in this area, although only two outbreaks were personally investigated. Treatment in a bluestone foot-bath produced good results.

10. *Photosensitisation*.—Two outbreaks of photosensitisation in A.I.S. cattle were investigated, in widely separated areas. In both cases rape was being liberally fed. All cases responded to treatment.

11. *Pneumonia and White Scours in Calves*.—Seven outbreaks were investigated and many more dealt with by written and verbal discussions. Where recommendations regarding management were carried out success was achieved.

Treatment of scours on clinical lines produced some success in the few cases of stud calves treated.

12. *Parasitic Diseases*.—Numerous inquiries and several investigations were made into the following parasitic diseases:—

- (a) *Lungworm of calves*—a common complaint in certain isolated districts and farms;
- (b) *Haemonchosis*—a common parasite in dairy calves, not often reaching pathogenic proportions, but responsible for some losses and much unthriftiness in some areas where the habitat is favourable.

13. Poisons.—

- (a) *Ergotism*—Ergot of paspalum was not so prevalent during last summer as in the previous year and a few reports of trouble were received. One case investigated involved a mortality of four in sixty, with many cases of sickness;
- (b) *Arsenic*—Several individual cases of arsenical poisoning were met with, diagnosis being confirmed by chemical analysis;
- (c) *Salvia coccinea*—is the subject of a special investigation;
- (d) *Yellowwood*—This plant also is at present under investigation;
- (e) *Cyanogenetic plants*—are frequently the subject of inquiry and investigation. Losses are sometimes heavy in isolated cases;
- (f) *Lantana*—A mortality of about 20 to 400 store cattle was found to be due to this plant. In the coastal range areas odd losses from this cause are encountered annually.

14. *Deficiency Diseases*.—A series of blood phosphate tests were carried out on cattle on grass-tree country; but these tests are still incomplete.

Most of the coastal country is deficient in phosphates; but practically no attempt is being made to remedy the defect. Lick-troughs are rare.

DISEASES IN PIGS.

1. *Necrotic Enteritis*.—Only two serious outbreaks of necrotic enteritis were investigated during the year, both occurring in piggeries feeding buttermilk. Losses in both cases approximated 20 per cent. The outbreaks were controlled by quarantining and destruction of clinical cases, and the institution of strictly hygienic methods, and took less than three months to clear up.

Numerous other cases were encountered in small lots of farmers' pigs. These cases are invariably associated with bad hygiene and unbalanced nutrition.

2. *Contagious Pneumonia*.—This is very common, although only two instances of severe mortality were reported for investigation. This disease is the chief limiting factor for

pig production in the district and is almost entirely due to mismanagement. It is most common in "feeder" pigs purchased as weaners.

3. *Ulcerative Spirochaetosis*.—One severe outbreak of this disease was encountered in a large piggery where about 15 per cent. of the pigs were affected. Treatment was applied to the majority of cases with much success. A change of weather was probably a big factor in control.

4. *Deficiency Diseases*.—One very serious loss in a piggery feeding buttermilk was due to deficiency and unbalanced ration. Up to 40 per cent. of the pigs showed signs of rickets, with a mortality (mainly due to complications) of up to 10 per cent. The mortality quickly disappeared in response to drastic changes of diet.

Anæmia of young pigs is also fairly common and is successfully treated in some instances by artificial feeding of iron salts.

5. *Specific Arthritis*.—One outbreak of this disease was encountered where a mortality of 20 per cent. had been experienced. Control measures were instituted with success.

6. *Food Poisoning*.—This is a common complaint in Central Queensland, especially where dairy pigs are purchased by the litter and put on to unlimited quantities of unwholesome food. Although common in previous years, only two cases were investigated during the past year.

In one case the dairy pigs had been fed swill from a military camp. Twelve deaths occurred in 100 pigs. In the other cases, a litter of weaners previously fed on fresh milk were transferred to unlimited quantities of bad milk. Mortality was 100 per cent.

DISEASES IN HORSES.

1. *Strangles*.—An outbreak of strangles occurred throughout the district early in the year, but mortality was low.

2. *Other Diseases*.—Several cases of tetanus and various surgical cases were met and dealt with.

OTHER DISEASES.

1. *Yellowwood Poisoning in Sheep*.—Cases of this trouble were met with for the first time in the Dawson Valley. Previously they had been confined to the Central Highlands.

2. *Oesophagostomiasis in Sheep*.—One outbreak in the Barcardine district was investigated. The mortality was low.

3. *Haemonchosis in Goats*.—One outbreak in the Duaringa area was investigated.

4. *Avian Diphtheria*.—This endemic disease caused some mortalities during the year in isolated flocks. Several investigations were made.

Some of the more interesting investigational work at Yeerongpilly has been done on a disease in sheep resembling in some respects enterotoxæmia, which, although the organism was not isolated, cleared up after inoculation with the specific vaccine for this disease.

An attempt was made to do some work on a disease in calves in which blood-stained urine is the main symptom, but up to date it has not been possible to collect sufficient data to draw any conclusion as to its aetiology, although there is a certain amount of evidence pointing to its relation to *ictero hæmoglobinuria* of calves described as occurring in New South Wales.

Work also was carried out on a disease in cattle occurring in the Connors Range, ascribed by some to yellowwood poisoning; and also a disease in cattle, occurring in the south-west of the State, characterised by large oedematous swellings of parts of the head and trunk, without any definite conclusions being arrived at, except in the latter case it has been proved that it is not contagious pleuro-pneumonia.

ANIMAL HEALTH STATION, OONONBA.

Activities of the Animal Health Station, Oonoonba, included—

- (i.) The diagnosis, treatment, and control of animal diseases and the administration of veterinary services in North Queensland;
- (ii.) Research work on problems of animal health and animal production.

Seasonal conditions in North Queensland during the period under review were very favourable to all branches of the pastoral industry. All classes of stock flourished, and the natural increase and general condition of the animals was well above that of a normal year. As is usual, the bounteous season was responsible for a marked increase in the activities of animal parasites, particularly the buffalo fly, the cattle tick, and the sheep blow-fly.

The most important diseases or animal health problems encountered during this period were:—Contagious pleuro-pneumonia of bovines, tick infestation and tick fever of bovines, buffalo fly infestation of bovines, tuberculosis of bovines and pigs, sterility, and mammitis of dairy cattle, tetanus in horses, and cutaneous myiasis of sheep.

Other diseases diagnosed either by specimens received at the station or from officers in the field included ephemeral fever, arsenical poisoning, and lantana poisoning of bovines; lungworm infestation, hæmaturia, contagious pneumonia, and white scours of calves; encephalitis, swamp cancer, strangles, and bot fly irritation of horses; contagious pneumonia, influenzal arthritis, ulcerative spirochaetosis, posterior paralysis, and scours in pigs; infestation with external parasites (lice and ked) and dermatitis or fleece-lifting in sheep; distemper, tick paralysis, and filariasis in dogs; contagious gastro-enteritis in cats; and fowl pox in fowls.

RESEARCH WORK.

Research work on tick fever problems and mineral deficiency in bovines was carried out in co-operation with the Council for Scientific and Industrial Research.

A spirochæte which is probably identical with *Treponema theileri*, recorded from South Africa, was detected in the blood of a bovine in North Queensland. The organism was studied and successfully transmitted by blood inoculations through a series of bovines.

Research work on animal production included:—

- (i.) General observations on the growth and fattening rate of cattle on coastal and western pastures;
- (ii.) Observations on the influence of seasonal calving on rate of growth;
- (iii.) Observations on cattle-bruising following transit by rail and the effects of spelling prior to slaughter in overcoming this bruising.

REPORT OF THE CHIEF INSPECTOR OF STOCK.

With the exception of parts of the South-western district good seasonal conditions prevailed in the pastoral districts, the Gulf country particularly.

Preliminary figures of live stock in the State on the 1st January last:—

	Estimate at 1st January, 1940.	Actual Numbers at 1st January, 1939.
Sheep	23,500,000	23,158,000
Cattle	6,125,000	6,097,089
Horses	445,000	445,296
Pigs	350,000	325,326

Assuming that the estimated number of sheep in the State on 1st January, 1940—23½ millions—is substantiated, the figure is the highest ever recorded in Queensland, and exceeds the record total of the previous year by approximately 340,000.

Horses exported overseas numbered 812.

STOCK SOLD AT CANNON HILL SALEYARDS.

Description of Stock.	1937-38.	1938-39.	1939-40.
Bullocks	94,391	67,534	56,498
Cows	73,875	73,823	61,468
Calves	73,955	66,890	73,101
Sheep	477,551	430,792	469,143
Lambs	62,294	88,092	97,062
Swine	62,014	62,021	76,263

Again there has been a decrease in cattle sold, but an increase in the other classes of stock.

During the latter part of this year increased activity by Southern buyers for store cattle was noticeable.

STOCK VALUES.

Prices.	1937-48.	1938-39.	1939-40.
Cattle—	£ s. d.	£ s. d.	£ s. d.
Average value per cential—			
Chiller Bullocks ..	1 11 10	1 8 11	1 12 0
Other bullocks ..	1 8 1	1 8 0	1 9 8
Cows and heifers ..	1 5 1	1 6 3	1 8 8
Other classes of stock—			
Average value per lb.—			
Wethers	0 0 3-53	0 0 2-98	0 0 2-95
Ewes	0 0 3-20	0 0 2-70	0 0 2-62
Lambs	0 0 6-89	0 0 5-73	0 0 5-78
Calves	0 0 3-37	0 0 3-17	0 0 3-70
Swine	0 0 6-66	0 0 6-29	0 0 6-67

Poison plant investigations included work on poison peach (*Trema aspera*), heart-leaf poison bush (*Gastrolobium grandiflorum*), fuschia bush (*Eremophila latrobei*); all these plants proved toxic to stock. Feeding experiments with young growth of roly poly (*Salsola kali*) were also carried out, but results from this plant were inconclusive.

ANIMAL NUTRITION.

The original programme of work has been continued and some additional investigations undertaken. Results of practical interest arising from the completion of a section of the drought feeding trials with sheep are summarised.

Of the concentrates employed, maize and meat meals have proved outstanding. The first is predominantly carbohydrate (energy producing) in composition and the second predominantly protein (maintenance). The former is very palatable; the latter is sparingly eaten. It is possible to feed maize meal and limit consumption by adding meat meal. Under severe drought conditions, this means that once a suitable level of feeding has been reached—as judged by the condition of the sheep—supplies of food may be put out in troughs or hoppers twice weekly instead of twice daily. The saving in labour, mixing, transport, &c., strongly commends this system. The results of large-scale field trials have proved the superiority of this method over all others.

The formulation and use of rations for stud sheep has been continued. Experiments with pigs to demonstrate the most economical utilisation of home-grown foodstuffs have been commenced. The rearing of calves on a milk-free diet has been demonstrated. Advisory work continues to form an important part of the nutritional services of the Department.

REGISTRATION OF DIPS.

The registration of all dips, both cattle and sheep, in the State is at present being proceeded with.

CONDEMNATION OF PIGS.

A constant endeavour is being made to eliminate the sources of tubercular infection in swine condemned at bacon factories, and farmers generally have been anxious to co-operate.

The elimination of possible sources of infection in the dairy herd has also had attention, and a considerable number of selected animals have been subjected to the tuberculin test; in many cases entire herds have been tested.

SLAUGHTER-HOUSES.

“The Slaughtering Act of 1898” has had, generally, satisfactory observance. Prosecutions numbered only 16, compared with 24 for the previous year.

Slaughter-houses throughout the State have had the supervision necessary for the maintenance of the requisite standard of cleanliness.

BUTCHER SHOPS.

Butcher shops have been subjected to constant inspections and little difficulty has been experienced in maintaining cleanliness.

Vehicles used for the delivery of meat have been kept under supervision and up to required hygienic standards.

BRISBANE ABATTOIR AREA.

The Regulations under “The Meat Industry Act have had attention during the past year.

Systematic inspections of butcher shops and vehicles numbered 2,500.

The standard of delivery vehicles has considerably improved.

The recently introduced system of beef grading in the metropolitan area, which has now been in force under departmental supervision for about ten months, is proving generally satisfactory.

METROPOLITAN SHOPS.

Details of Registrations up to 30th June, 1940.

	1937-38.	1938-39.	1939-40.
Butcher shops	293	302	307
Delivery vehicles	437	455	464
Cash cutting carts	64	64	63

BACON FACTORIES.

There has been an unprecedented increase in killings at bacon factories during the last two years. This year shows an increase of 74,395 over the previous year, and in two years the increase has been 135,775. The number of pigs exported during the last twelve months has also increased considerably.

DETAILS.

No. Slaughtered.	1937-38.	1938-39.	1939-40.
Pigs	293,723	355,103	429,498

Of the 1939-40 total, 110,127 pigs were slaughtered for export purposes.

CONDEMNATIONS.

Tuberculosis.	1937-38.	Per cent.	1938-39.	Per cent.	1939-40.	Per cent.
Carcases	2,268	·77	2,516	·70	2,612	·60
Heads	22,387	7·6	26,893	7·5	27,882	6·4

In addition, 32,854 cattle and 13,772 calves were slaughtered at bacon factories.

The progressive reduction in the bacon factory condemnation of carcasses and heads for tuberculosis is attributable to the extensive work of field officers in eliminating the source of the trouble on the farms by improving hygienic conditions of sties, and detecting by testing of infected dairy cows which are subsequently destroyed.

STOCK SLAUGHTERED AND CONDEMNED AT THE BRISBANE ABATTOIR.

The following tables show the numbers of stock slaughtered and condemned at the Brisbane Abattoir for the home markets, stock killed for export purposes not being included. It will be seen that, with the exception of sheep and lambs, there has been a decrease in the classes of stock slaughtered:—

Description of Stock.	1937-38.	1938-39.	1939-40.
Bullocks	32,794	39,069	29,889
Cows	61,880	90,237	69,458
Calves	74,735	80,810	75,836
Sheep and lambs	384,618	395,777	417,481
Swine	31,829	29,200	28,401

Condemnations were:—

Cause.	Bullocks.	Cows.	Sheep and Lambs.	Calves.	Swine.
Tuberculosis	404	1,054	..	5	749
Bruising	41	81	22	13	..
Emaciation	184	500	941	7,230	..
Gangrene	51	104	..	21	5
Fever	19	40	134	5	..
Abscesses	22	36	166	1	1
Redwater	4	17	..	..	..
Pleurisy	..	..	..	1	..
Peritonitis	..	3	..	..	4
Jaundice	..	..	..	1	..
Other causes	19	52	2	22	34

POLICE INSPECTION.

The return of stock slaughtered under the supervision of police acting inspectors, as compared with the two previous years, is as follows:—

Description of Stock.	1937-38.	1938-39.	1939-40.
Bullocks	23,275	35,043	28,136
Cows	49,475	56,184	49,680
Calves	5,156	6,645	6,988
Sheep	64,939	66,634	75,229
Swine	15,696	15,644	15,618

The subjoined table compiled from returns furnished by officers of the Department performing slaughtering duties throughout the State shows stock slaughtered and condemned in the course of the year.

Description of Stock.	Number Slaughtered.	Carcases and Portions Condemned.	Disease.	Per centage.
Bullocks ..	43,875	69 Carcases .. 19 Forequarters .. 14 Heads .. 2 Carcases .. 7 Forequarters .. 1 Carcase .. 1 Carcase .. 48 Heads .. 2 Carcases .. 3 Carcases .. 1 Carcase .. 2 Forequarters ..	Tuberculosis .. Tuberculosis .. Tuberculosis .. Bruised .. Bruised .. Emaciation .. Redwater .. Actinomycosis .. Fevered .. Lantana .. Poisoning .. Actinomycosis .. Diseased .. Sternum ..	·15 ·04 ·03 ·004 ·01 ·002 ·002 ·10 ·004 ·006 ·002 ·004
Cows ..	113,335	284 Carcases .. 41 Forequarters .. 9 Hindquarters .. 33 Heads .. 15 Carcases .. 6 Forequarters .. 3 Carcases .. 20 Heads .. 2 Carcases .. 2 Carcases .. 1 Carcase .. 1 Carcase ..	Tuberculosis .. Tuberculosis .. Tuberculosis .. Tuberculosis .. Bruised .. Bruised .. Emaciation .. Actinomycosis .. Septicæmia .. Fevered .. Septic Metritis .. Lantana .. Poisoning ..	·25 ·03 ·007 ·02 ·01 ·005 ·002 ·01 ·001 ·001 ·0008 ·0008 3·09
Calves ..	20,734	642 Carcases .. 1 Carcase ..	Under weight .. Tuberculosis ..	·004
Sheep ..	265,083	58 Carcases .. 7 Carcases .. 1 Carcase .. 1 Carcase .. 1 Carcase .. 1 Carcase .. 1 Forequarter .. 1 Carcase .. 1 Carcase .. 1 Carcase .. 1 Carcase .. 1 Carcase .. 2 Carcases .. 3 Carcases .. 2 Carcases .. 2 Carcases .. 1 Carcase .. 6 Carcases ..	Emaciation .. Bruised .. Multiple .. Abscesses .. Fevered .. Epithelioma .. Caseous Lymph .. Adenitis .. Caseous Lymph .. Adenitis .. Jaundice .. Oedema .. Tuberculosis .. Tuberculosis .. Abscesses .. Abscesses .. Bruised .. Stephanurus .. Infection .. Pyæmia .. Swine plague .. Putrefaction .. Emaciation .. Jaundice .. Septic pneumonia ..	·02 ·002 ·0003 ·0003 ·0003 ·0003 ·0003 ·0003 ·0003 ·0003 ·0003 ·0003 ·004 ·007 ·004 ·004 ·002 ·001
Pigs ..	42,436	161 Carcases .. 1,366 Heads .. 11 Carcases .. 9 Heads .. 2 Carcases .. 3 Carcases .. 2 Carcases .. 3 Carcases .. 2 Carcases .. 2 Carcases .. 1 Carcase .. 6 Carcases ..	Jaundice .. Oedema .. Tuberculosis .. Tuberculosis .. Abscesses .. Abscesses .. Bruised .. Stephanurus .. Infection .. Pyæmia .. Swine plague .. Putrefaction .. Emaciation .. Jaundice .. Septic pneumonia ..	·0003 ·0003 ·37 ·14 ·02 ·02 ·004 ·007 ·004 ·007 ·004 ·002 ·002 ·01

Following is a summary of all stock slaughtered throughout the State for home consumption. It is exclusive of stock killed for export purposes and those killed on farms and stations for private consumption.

Inspection.	Bullocks.	Cows.	Calves.	Sheep.	Swine.
Bacon Factories ..	9,050	23,804	13,772	..	319,371
Brisbane Abattoir ..	29,889	69,458	75,836	417,481	28,401
Departmental Inspectors ..	43,875	113,335	20,734	265,083	42,436
Police—Acting Inspectors ..	28,136	49,680	6,988	75,229	15,618
Totals ..	110,950	256,277	117,330	757,793	405,826

L. D. CAREY,
Chief Inspector of Stock.

APPENDIX A.
SHEEP AND WOOL BRANCH.

Most of the sheep-breeding areas of Queensland experienced a fair to good season. In the South-western districts rainfalls were light. Consequently, a shortage of pasture now exists and many holdings are bare of feed.

Stimulated by widespread seasonal rains in the Central and North-western pastoral districts, Mitchell and Flinders grass pastures are now completely re-established over vast areas.

During the early portion of the year store stock were in fair demand at reasonable values. Later in the season the demand slackened gradually, leaving the present state of the market rather depressed. This is, no doubt, due to the drier conditions now prevailing and the lack of Southern demand, together with the fact that during recent years the sheep population of the State has increased to record numbers and to overstocking point on many holdings.

Fat sheep throughout the year were in fair to good supply at payable, but not high prices. These prices, in sympathy with store values, have been on a lower level during late sales, prime light weight wethers reaching 3d. and prime ewes 2½d. per lb., plus wool and skin values. Fattening on the Darling Downs is increasing.

Merino stud flocks have increased in numbers and show an improvement in type and wool character.

Lambing percentages have been well maintained throughout most of the breeding areas of the State, with the result that the previous record number of sheep, 23,158,569, is expected to be exceeded.

Wool appraisalment during the year established a record for one year's production in Queensland, amounting to 657,000 bales.

More use is now being made of facilities provided under the farmers' wool scheme under which 866 bales were handled, as compared with 705 bales last year.

Fat lamb raising is an expanding industry on the Darling Downs. The quality of the lambs marketed indicated that better type rams are in more general use, and that improved methods of topping-off at an early age are being applied. The use of better type British rams and better class breeding ewes is producing the lamb suitable for export.

Studs of the Border Leicester, Romney Marsh, Southdown, Dorset Horn, and the Corriedale breeds have been registered. The establishment of these studs has already proved beneficial to the industry, especially to those fat lamb raising in, as yet, a small way, and who require pure-bred stock for flock improvement.

Corriedale studs are established principally to breed a type suitable for use as both a mutton and wool producer, the ewes being particularly valuable as the breeding flock for fat lamb raisers.

Last year was the fifth year of operation of the departmental fat lamb scheme. Over 100 growers, to whom over 400 rams of the British breeds have been allotted on loan, are contributing to its success. Most consistent returns have been obtained from Darling Downs flocks.

Favourable reports have been received from other districts, including the high rainfall coastal regions from the New South Wales border to the Atherton Tableland, where the progeny from the Romney Marsh and Dorset Horn rams have so developed as to become superior to their merino mothers.

The following are details of sales of lambs of the various crosses:—

Rams.	Ewes.	No. of Lambs.	No. of Sales.	Averaged	General Average
				<i>s. d.</i>	<i>s. d.</i>
B. Leicester	Merino	1,057	..	16 9	..
B. Leicester	Corriedale	77	..	20 0	..
B. Leicester	R.M. Cross	66	..	18 3	..
B. Leicester	B.L. Cross	175	..	18 6	..
B. Leicester	Crossbred	54	..	19 0	..
B. Leicester	Comeback	417	..	17 4	..
B. Leicester	All ewes	1,846	16	..	17 5
R. Marsh	Merino	258	..	18 3	..
R. Marsh	Comeback	79	..	21 3	..
R. Marsh	All ewes	..	1	..	18 11
Corriedale	Merino	70	..	13 10	..
Corriedale	Crossbred	82	..	17 6	..
Corriedale	All ewes	152	4	..	16 0
Southdown	Merino	206	..	16 8	..
Southdown	B.L. Cross	126	..	18 11	..
Southdown	R.M. Cross	66	..	18 3	..
Southdown	Crossbred	71	..	18 11	..
Southdown	Comeback	55	..	17 3	..
Southdown	All ewes	524	10	..	17 10
Dorset Horn	Merino	1,548	..	17 2	..
Dorset Horn	B.L. Cross	514	..	18 4	..
Dorset Horn	E.L. Cross	622	..	17 6	..
Dorset Horn	Crossbred	318	..	16 6	..
Dorset Horn	Comeback	75	..	20 4	..
Dorset Horn	All ewes	3,075	..	..	17 4

The most outstanding feature of the result obtained was the advantage and the importance of the crossbred ewes, no matter what ram was in use.

Linked with this scheme are five trials in which the Border Leicester, Dorset Horn, and Southdown rams are mated with merino Border Leicester x merino and Romney Marsh x merino ewes. The trials are located on the south, middle and northern Darling Downs, and from which useful comparative results are expected. Correct methods of sheep husbandry are reflected in the returns obtained, indicating that success depends largely on the owner himself.

JAS. CAREW,
Senior Instructor in Sheep and Wool.

APPENDIX B.

THE POULTRY INDUSTRY.

In the course of the year the Queensland Egg Board handled approximately 5,300,000 dozen eggs, of which 29.5 per cent. were exported.

There has been a steady improvement of the quality of eggs marketed and values have been well maintained.

Fodder Values.—The following table indicates the average retail cost of poultry foods in Brisbane:—

AVERAGE RETAIL COST AT BRISBANE.

Period.	Maize Per Bushel.	Wheat Per Bushel.	Pollard Per 100 lb.	Bran Per 100 lb.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
First half 1936	5 2½	4 11	7 7	7 4
Second half 1936	5 10	5 1½	8 1	8 0
First half 1937	6 5	6 7	8 4	7 10
Second half 1937	6 0	6 5	8 11	8 6
First half 1938	5 1	5 6	8 6	8 2
Second half 1938	4 8	4 3	7 7½	7 4
First half 1939	4 7	3 6	6 8½	6 5½
Second half 1939	4 3½	3 7½	6 8½	6 6½
First half 1940	4 10	4 10	7 4½	6 8½

It will be noted that for the first half of 1940 values have tended to harden. This may lead to a slight steadying in the expansion of the industry noted in recent years.

Voluntary registration of hatcheries has extended.

Registered hatcheries now total 61. Birds already blood-tested for registered hatcheries number 93,302.

The practice of sex determination in chickens is extending.

P. RUMBALL, Poultry Expert.

APPENDIX C.

BRANDS REGISTRATION.

1939-1940.

	Number.	Fees Received.	Number Since Inception of Legislation
		<i>£ s. d.</i>	
Three-piece brands registered ..	603	603 0 0	88,444
Cancelled brands re-allotted ..	32	96 0 0	7,129
Symbol brands registered ..	29	217 10 0	1,691
Cattle earmarks registered ..	354	354 0 0	18,082
Brands transferred ..	1,524	762 0 0	57,528
Sheep brands and earmarks registered	190	115 10 0	12,896
Sheep brands and earmarks transferred ..	156	39 0 0	6,625
Distinctive brands registered ..	23	No fee	..
Alteration of address of brands ..	290	No fee	..
Brands cancelled ..	13	No fee	..
Earmarks cancelled ..	107	No fee	..
Total	..	£2,187 0 0	..

The general registrations and transfers have not maintained the increase of the previous year, but in view of the condition of world affairs the slight decrease was to be expected because of the enlistment of many men engaged in the pastoral industries for war service.

H. S. ILIFF,
Registrar of Brands.

APPENDIX D.

VETERINARY SURGEONS' BOARD.

New registrations numbered 16. The number of veterinary surgeons registered to the 30th June, 1940, totalled 106.

It is recorded with regret that in December last Lieutenant-Colonel A. H. Cory, V.D., M.R.C.V.S., one of the original members of the Board, died after a short illness, following his retirement from the position of Chief Inspector of Stock, which he had held for nearly 25 years.

The Board thereby lost the valuable services of a colleague of wide experience who was noted for his professional ability, genial personality, and kindly disposition.

H. S. ILIFF,
Registrar.

REPORT OF THE AGRICULTURAL CHEMIST.

The samples received for analysis during the year numbered 10,063, an increase of 762 on the number for the previous year.

Glassware samples received for testing totalled 9,452, of which 9,255 were approved.

Other analytical services included the examination of viscera and toxicological specimens, Customs samples, soils, grasses, and shrubs, veterinary medicines and pest destroyers.

Soils.—Many samples of soil were received from farmers and from persons who intend going on the land, particularly for the purpose of growing quick return marketable crops, and in connection with the last-mentioned samples most did not receive full chemical analysis, but were examined for acidity, humus, and available phosphoric acid, and then when possible extension officers of the Department visited the properties from where the samples were taken and reported whether conditions existing were favourable or otherwise for production of any desired crop.

Again this year a very considerable amount of analytical soil work was done in co-operation with the Forestry Sub-Department in respect of chlorosis, forest litters, and fused needle of pine trees. In this work the phosphoric acid soluble in 20 per cent. hydrochloric acid was determined in 273 soil samples, a number of such determinations were made in connection with fused needle disease in pine trees covering an initial survey to determine the soils in various forest plantations requiring application of phosphoric acid to eliminate the possibility of fused needle disease, and also in a number of these samples the capacity for fixing phosphoric acid in a more or less unavailable condition was determined; also in this investigation 35 samples of leaves and litters were analysed for their phosphoric acid content. In regard to the effect of forest litter, the humus content of 15 soil samples was determined.

In connection with soil nitrification the following soil samples were received during the year for nitrate nitrogen determination:—From the Cotton Branch, 1,968 samples; from the Queensland Agricultural College, Lawes, 20 samples; and from research officers of the Department, 18 samples.

The following soil samples were forwarded for the determination of their carbon-nitrogen ratio:—From Cotton Branch, 60 samples; Tobacco Branch, 18; and Forestry Department, 8.

Grasses and Shrubs.—Besides grass samples received from stockowners, three long-time experimental pasture trials were undertaken. As stated in last year's report the Cotton Branch is investigating the effect of a Rhodes grass, cotton rotation under different cultural methods, and from this branch 48 samples of Rhodes grass were submitted for analysis.

The Bureau of Tropical Agriculture, South Johnstone, has a number of experimental plots of various pasture plants which to ascertain their feed value are being cut at different stages of growth, and from the Bureau 57 samples were received for analysis.

At the Queensland Agricultural College, Lawes, an investigation into the nature of growth, crop return, and feed value of different strains of Rhodes grass is proceeding. In the course of the year 467 samples were submitted from this investigation for partial chemical analysis.

Analyses were conducted upon 49 samples of plants submitted by the Poison Plants Committee of the Department.

In connection with the determination of residual spray ingredients on plants 104 plant samples for analysis were submitted by officers of the Division of Plant Industry.

E. H. GURNEY,
Acting Agricultural Chemist.

REPORT OF THE SEEDS, FERTILIZERS, VETERINARY MEDICINES, PEST DESTROYERS, AND STOCK FOODS INVESTIGATION BRANCH.

An increase of 226 samples over last year's figures was dealt with during the year.

The effects of the war on supplies of materials coming within the scope of the Acts administered by this branch are difficult to fully appreciate. Such effects may be either direct, such as cessation of supplies from belligerents, or indirect, such as shortage, because of lack of shipping facilities.

Commodities affected were:—

Commodity.	Place of Origin.
Seeds	England, Denmark, Holland, Germany, Hungary, France, Italy, United States of America, Japan, South Sea Islands, New Zealand, Ceylon
Fertilizers	England, Germany, France, Spain, Palestine, United States of America, Sicily, Canada, Chile, Nauru and Ocean Islands
Veterinary Medicines	England, Germany, United States of America, West Indies, and other countries
Pest Destroyers ..	England, United States of America, Belgium, Sicily, Japan, Kenya, South America, Malay States, East Indies, &c.
Stock Foods	England, South Sea Islands, India, New Zealand

Seeds of the prohibited plant known in Queensland under the various names of datura, stramonium, thorn apple, and castor oil plant were found in commercial samples of the following seeds:—Sudan, White Panicum, Prairie Grass, Japanese Millet, and Cowpeas.

Many seed-cleaning machinery units have been installed, and farmers and merchants are now availing themselves of the benefits of the services inaugurated.

It cannot be too strongly emphasised that a large share of the responsibility for production of better seeds lies with growers, buyers, and sellers.

Farmers' Samples.—The number of farmers who have availed themselves of the free examination and report service decreased slightly.

Tobacco Seed Sterilisation.—Tobacco seed distributed by the Department is now sterilised.

Trial Grounds.—With the co-operation of the Director of Agriculture, samples representing oat varieties offered for sale as seeds for sowing were sown for purposes of identification. This aspect of the work of the branch is of growing importance.

Seed Storage Experiments.—Because of the difficulty of maintaining viability in vegetable seeds in Queensland, experiment work designed to ascertain the best storage conditions was started last September, and will extend over a two-year period, embracing various conditions of storage and covering localities in the environs of Brisbane, Stanthorpe, and places in North Queensland. The plan covers the storage of seeds in airtight containers at appropriate temperatures.

In the course of the year a quantity of vegetable seeds was refused entry to Queensland from overseas because of faulty germination.

Fertilizers.—A survey of analyses indicates that fertilizers now being offered for sale in this State may be purchased with confidence. Only two samples were received from buyers who apparently doubted the quality of material received; both of these samples were found, on analysis, to be in accordance with the seller's guarantee.

Fertilizer Supplies.—In the past, Queensland supplies of fertilizers have been drawn from various countries. The war is having a serious effect on supplies of sulphate of ammonia and potash. Continuity of supplies of the former material has been maintained. With potash, however, Palestine remains the sole remaining source.

Sulphate of ammonia, potash in all its various forms, and any fertilizer mixture containing any such substances have been declared "essential agricultural requirements" under "The Agricultural Requirements Control and Conservation Act of 1939". This action has been taken in order that steps to conserve and ration supplies of these materials may be instituted at short notice.

Veterinary Medicines.—Under legislative authority, effective supervision over the sale of veterinary medicines in respect of efficacy and quality has been maintained.

Pest Destroyers.—Legislation relating to the control of the sale of pest destroyers was revised by a repeal of the Act of 1923 and the passing of "The Pest Destroyers Act of 1939" which came into operation on the first day of January, 1940. The new Act was designed to embody the experience of the past sixteen years, including that gained with respect to administration of the other Acts.

F. B. COLEMAN, Officer in Charge.

REPORT OF THE EDITOR OF PUBLICATIONS.

An extensive informational service was maintained by the Publicity Branch throughout the year. Departmental publications, the Press and the broadcasting services are the chief channels of communication.

Now entering on its 44th year of publication, *The Queensland Agricultural Journal* continues its useful service to the primary producers of the State. One of its main purposes is the publication of the results of research work and their application in general farming practice. In addition, through the *Journal*, a wide diversity of information on topical rural subjects is disseminated from month to month. Its continued usefulness is assured by regular contributions from officers of the Department engaged in investigational and field activities. Numerous special papers, many containing the results of original research, were published in the *Journal* in course of the year. These papers were issued subsequently as separates for general distribution. The maintenance of a high standard is only possible through the continued practical interest and co-operation of the chiefs of the Research and Field Divisions of the Department. The circulation of the *Journal* has neither increased nor diminished appreciably, the annual aggregate distribution remaining between 112,000 and 113,000 copies.

The Weekly News Bulletin, which was designed to supply a regular Press service, is now in its fifth year of publication. Containing practical seasonal and educational notes, and recommendations relating to specific remedies and their application, the *Bulletin* is accepted as an authoritative source of agricultural news.

In addition to this regular service, many special articles on agricultural development and progress were supplied for Press publication.

The supply of authoritative information and suitable illustrations for feature articles to writers for the Press, also of material for public addresses, was included in the general services of the Publicity Branch. Lectures on aspects of country life and work were also among its activities.

The bulletin, pamphlet, and advisory leaflet services of the Department, for which the demand is constant, were continued. An aggregate of 59,000 copies of these publications was made available for distribution.

An additional volume of *The Queensland Agricultural and Pastoral Handbook* was published, and two more will soon be off the press.

In co-operation with the Australian Broadcasting Commission, radio talks on rural topics during the Sunday morning Countryman's Session were continued throughout the term.

The Photographic Section had another very busy year. The demand for photographic prints, lantern slides, and process blocks also remains constant. One important addition was made to the film library.

CENTRAL LIBRARY.

In the central library the Department has a valuable collection of technical literature, to which many important additions were made in the course of the year. The demand on the resources and facilities of the library is steadily increasing. Sectional libraries also were well maintained.

JOHN REID,
Editor of Publications.

REPORT OF THE DIRECTOR OF MARKETING FOR THE YEAR 1939-40.

In accordance with the provisions of "The Primary Producers' Organisation and Marketing Acts, 1926 to 1939," I have the honour to submit herewith a report of the operations of the organisations that have been constituted in relation to the various commodities under the legislative measures which have been enacted to provide for the organised marketing of primary products in Queensland.

The operations of certain of the marketing organisations have been affected as a consequence of action taken by the Commonwealth Government, following upon the outbreak of war in September, 1939, to exercise Australian-wide control, under powers conferred by the National Security Act 1939, over a number of commodities, the normal marketing of which had become deranged by the national emergency. Of the commodities which have come under National Security Act control, butter, cheese, eggs, wheat, barley, apples, and pears were already organised under Queensland marketing legislation. Commonwealth control of butter, cheese, and eggs being limited to exports, the transition was effected without any irritating disturbance of existing practices. The dairying industry, in fact, was so efficiently organised on an Australian basis in peace time that the Commonwealth Government made use of the existing organisation, and sought guidance from the leaders of the industry in connection with war-time control problems. The other commodities concerned—i.e., wheat, barley, apples, and pears—although subject to efficient marketing control in Queensland, were unorganised in the other States. In this State these latter industries, either because of geographical position or time of maturity, have in each case grown to their present stage of modest development because they rest upon a foundation of natural protection against the full effects of competition with the products of similar industries in other States. In such cases, arbitrary Australian-wide application of uniform marketing rules often has had the effect of seriously disturbing the natural economic level between sections of the industry in different States or localities.

ARROWROOT BOARD.

The Board is empowered to function until 14th April, 1943.

1939 Crop.—The Board's receipts ex the 1939 crop amounted to 528 tons flour, all of which has been disposed of, the minimum price realised being £40 per ton, despite competition from millers outside the aegis of the Pool.

1940 Crop.—It is estimated that the 1940 crop will, on present indications, yield 1,000 tons flour, supplies of which should be available about the middle of August.

Consideration of the fact that millers competing with the Pool continue to pursue the ill-advised policy of undercutting prices, and will probably have carry-over stocks when the new season's crop comes on to an Australian market which does not require more than 750 to 800 tons arrowroot flour per annum, gives rise to the contention that anything but a firm market will prevail during the ensuing year.

ATHERTON MAIZE BOARD.

The Board is empowered to function to 30th June, 1943.

1939-40 SEASON.

OPERATIONS OF STOCKS.		Tons.	Tons.
Maize Delivered—			
Gross delivered by Growers	16,778		
Returns to Growers	306		
	16,472		
Less Moisture	248		
	16,224		
Plus Carry-over, 1938-39 Stocks ..	2,801		19,025
Maize Despatches—			
Total Sales, including Stocks ..	20,319		
Less Weight of bags sold as Maize ..	291		
	20,028		
Less Poultry Food Ingredients ..	1,265		
	18,763		
Plus Offal Sales	160		
	18,923		
Net under-run	102		

This under-run represents 0.6 per cent of the total delivery, compared with 0.8 per cent. the previous year.

Marketing.—The realisations on sales during the crop year ended 31st May, 1940, amounted to £149,081 14s. 11d., which includes poultry, pig, and cattle mashes. Maize repurchased by growers accounted for a further amount of £1,916 8s.

Three advance payments of £4, 10s., and £1 respectively, have been made to growers to date. The final payment, which is imminent, at the rate of 10s. 4d. per ton, will bring the season's total payment to £6 0s. 4d. per ton of maize containing 3 per cent. of dead grain, with premiums and dockages according to quality.

The 1939-40 pool expenditure amounted to £1 14s. 10d. per ton, which includes shelling costs and the season's contribution of £2,000 and interest to the T. McHugh Pty. funded debt from 1937-38 season.

Poultry, Pig, and Cattle Foods.—This manufacturing activity of the Board showed further expansion during the twelve months ended 31st May, 1940, a total of 54,400 bags being disposed of compared with 37,390 bags in the previous year. After allowing for the purchase of other ingredients and mixing and advertising costs, the realisation on maize used in mashes was £7 5s. per ton net. Sales of mashes over the above period provided an outlet for an additional 1,505 tons of maize on the Northern market, which continues to improve.

BARLEY BOARD.

The Board is empowered to function to 23rd April, 1942.

1938-39 Season.—Records were established both in the deliveries to the Board of 122,736 bushels of barley (to which there was added a carry-over from the previous season

of 696 bushels 44 lb.), and in the payment of 3s. 5d. per bushel for Chevalier malting barley, which is the highest payment to growers since the inception of the pool.

First advances having been made at the following rates per bushel net on rails at growers' stations, viz., Chevalier malting, 2s. 3d.; Cape malting, 1s. 9d.; and Feed, 1s., the Board, during the period under review, paid a second advance of 6d. per bushel, and a final advance of 8d. per bushel now is imminent.

The intake was classified as—Chevalier malting, 81,395 bushels; Cape malting, 8,586 bushels; and Feed barley, 33,450 bushels.

Sales of barley of all grades amounted to 73,149 bushels, and 47,092 bushels were malted by the Board for an outturn of 48,572 bushels 42 lb. of malt.

Board expenses, including malting costs, amounted to 10.58d. per bushel. No damage was sustained by hail during the season, and no charge was made against growers for hail insurance premium.

1939-40 Season.—The intake exceeded all previous records since the constitution of the Board in 1930, the quantity received being 138,217 bushels, which has been classified as follows:—No. 1 Chevalier, 89,222 bushels; No. 2 Chevalier, 21,371 bushels; Feed Chevalier, 17,403 bushels; Cape malting, 9,272 bushels; and Cape feed, 948 bushels.

As Australia's exports were seriously affected by shipping shortage, after the outbreak of war, the Commonwealth Government, at the request of growers in the Southern States, acquired the entire Australian barley crop, except barley retained on farms for seed and feed, but not for sale, and barley of the skinless variety. The Australian production approximated 15,000,000 bushels, of which 10,000,000 bushels were in South Australia. It was expected 5,000,000 bushels would be utilised as feed, thus leaving 10,000,000 bushels for marketing as malting barley. Australian maltsters and brewers were expected to absorb 3,000,000 bushels, and 1,000,000 bushels would probably find a market as pearl barley, crushed barley, &c., leaving 6,000,000 bushels as an exportable surplus, of which approximately 5,000,000 bushels would be in South Australia.

Efforts to secure exemption from acquisition for Queensland, with its crop below the State's needs, were unavailing. The Minister of State for Commerce appointed an Australian Barley Board, with headquarters in Adelaide, to handle and market the crop. The Queensland Barley Board was appointed as an advisory committee to assist the Australian Board, and also sole licensed receiver in this State. A commission covers the cost of its services.

Advances have been paid to growers by the Australian Barley Board, the first being at the rate of 1s. 3d. per bushel for No. 1 Chevalier; 2s. per bushel for No. 2 Chevalier and Cape malting; and 9d. per bushel for Feed grade of both varieties. The second advance was at the rate of 1s. per bushel on all deliveries, less the freight incurred from sender's station to receiving depot.

Disposals of malting barley to the two Queensland maltsters comprise 70,000 bushels.

In addition to its functions in administering the Commonwealth acquisition scheme in this State, and as sole licensed receiver for the Australian Barley Board, the Queensland Barley Board has continued its malting activities at the Black Gully Malthouse, Toowoomba. Barley for the purpose has been purchased from the Australian Board.

The Australian Board's price for barley was fixed, ex trucks, at terminals (Toowoomba in the case of Queensland) on a basis of 4s. 3d. per bushel for No. 1 Chevalier malting and 3s. 6d. per bushel for Cape malting barley.

BROOM MILLET BOARD.

The Board is empowered to function to 31st October, 1943.

1938-39 Season.—As mentioned in my last report, the Board did not exercise full control during this season, which covered the period 1st November, 1938, to 31st October, 1939. The quantity of broom millet received and sold was 133 tons 0 cwt. 0 qr. 21 lb., which realised £5,907 4s. 1d., the average rate per ton being £44 8s. 3d. The maximum price at which sales were made was £65 per ton, and the minimum £10 per ton. As was the case in the previous season, the tonnage produced was not sufficient for local requirements; consequently manufacturers were obliged to procure the balance of their requirements from the Southern States.

1939-40 Season.—On account of the prevailing conditions, it was again decided not to exercise full control during the 1939-40 season, but to carry on in the same manner as previously.

From 1st November, 1939, to 30th June, 1940, 73 tons 9 cwt. 1 qr. 9 lb. of broom millet were sold, realising £3,692 14s. 2d., or an average of £50 5s. per ton, the maximum and minimum prices realised being £57 10s. and £30 per ton respectively.

BUTTER BOARD.

The Board is empowered to function to 31st December, 1941.

Production.—The production of butter in Queensland for the year ended 30th June, 1940, amounted to 2,496,350 boxes, as compared with 2,756,657 boxes for the previous season.

Sales.—Butter sales from Queensland during the twelve months ended 30th June, 1940, comprised 534,067 boxes in Queensland and 101,075 boxes interstate, making a total within the Commonwealth of 635,142 boxes.

Exports totalled 1,878,023 boxes, of which 1,795,034 boxes went to Great Britain. Home consumption and export sales for the year thus totalled 2,513,165 boxes.

Consumption.—Approximately 12,000 boxes of butter were imported from other States for border trade sales, &c., which, plus local sales of Queensland-made butter, places the consumption within the State at approximately 546,067 boxes, as compared with 537,915 boxes in 1938-39.

Values Returned to Manufacturers.—The total net value of the 2,513,165 boxes of butter sold during the year ended 30th June, 1940, was £8,946,922 0s. 4d., compared with £9,468,530 11s. for 2,775,211 boxes sold in the preceding year. The net prices returned to factories on the basis of equalisation figures show a net value per box of £3-56002173, or 1s. 3-25d per lb. approximately. The previous year's returns were £3-41182366 per box, or 1s. 2-63 per lb. approximately. In these figures allowance has been made for the deduction of selling commission, and the values represent, therefore, net returns at agents' floors, Australian port of shipment, or other recognised centres of distribution.

Local Marketing Control.—The Board's operations at Hamilton have continued to give satisfaction to all concerned, and its policy of local marketing control has over the year ended 30th June, 1940, been responsible for enhancing the return to Queensland dairymen by £44,702 9s. 1d.

Butter Improvement Service.—With a view to the standardisation and improvement of the quality of Queensland butters, the Board during the year decided to co-operate with the Department of Agriculture in the establishment of a butter improvement service. The scheme involves provision by the Board of extended laboratory accommodation and equipment at Hamilton, where all butters entering the store will be subjected to bacteriological tests, and tests in relation to salt and moisture content. Factories situated north of Maryborough may take advantage of the scheme by having samples taken by departmental officers and despatched to Brisbane in special ice boxes. The scheme is linked with the dairy improvement work of the Department of Agriculture in field and factory.

The service indicated, which is now in operation, replaces the previously existing standardisation service of the Department, and, in view of financial assistance rendered by the Board, is free to all factories in the State.

Administrative Expenses.—The actual administrative cost of the Board, as apart from cartage and costs involved in the cutting of the butter in Brisbane, applied to the production for the year worked out at 4d. per box.

Marketing Arrangements Under War Conditions.—Notwithstanding the grave developments that have occurred during the year, there has been little disturbance of usual practices associated with the marketing of Queensland butter. This is due largely to the determination of the Commonwealth Government to make the maximum use of the machinery of the Australian Dairy Board and Commonwealth Dairy Produce Equalisation Committee, and of the marketing facilities of the industry generally, in making such arrangements as it has so far found necessary for the marketing of butter and cheese under war conditions.

The first war-time butter contract between the Australian Government and the British Ministry of Food operated from 13th November, 1939, to 30th June, 1940, and was in respect to a quantity of butter of 75,500 tons, which is on a basis of 94,500 tons per annum. Contract prices, expressed in f.o.b. values, Australian currency, were as follows:—

Grade.	Per cwt.
	s. d.
choicest	137 2½
first grade	135 7½
second grade	131 1½
pastry	127 6

The contract provided for payment to be made 90 per cent. on shipment and 10 per cent. within twenty-eight days after arrival, or, if vessel lost, of estimated due date of arrival. The point of sale was f.o.b. Australian port.

CANARY SEED BOARD.

The life of the Board was extended, without opposition, for a period of three years after the 30th June, 1940. This action was found necessary in order to assist the Board to secure finance.

The Board functioned actively throughout the year and gave effect to the policy as laid down by the Canary Seed Growers' Association. Canary-seed cleaning and grading operations were carried out on the farms or at local depots,

instead of as formerly in a central grading establishment. An organiser was maintained in the field for a considerable part of the season, contractors with grading and cleaning plant were encouraged to support the organisation, and certain changes were effected in selling policy.

1937-38 Season.—This season's pool was finalised on the 2nd February, 1940, by a final payment of £1 14s. 6d. per ton. After deducting 10s. per ton for hail insurance premium, growers received a net payment of £21 4s. 6d. per ton. The intake weight of deliveries to the Pool was 917 tons 8 cwt. 3 qr. 3 lb., which, after cleaning and grading, yielded 730 tons 18 cwt. 0 qr. 14 lb. of commercial seed, and 118 tons 18 cwt. 3 qr. 13 lb. of inferior seed, broken grain, and gradings. Loss in cleaning amounted to 67 tons 11 cwt. 3 qr. 4 lb., or 7.37 per cent.

Figures published by the Government Statistician indicate that the crop yielded 2,447 tons from an area of 17,262 acres. In the early part of the season growers who sold outside the Pool disposed of their product for cash on a market where wholesale prices ranged up to £40 per ton. In the previous season, with a shortage of canary seed in Argentina forcing up prices, up to £50 a ton was paid to merchants in Australia for canary seed.

1938-39 Season.—Figures now available from the Annual Report of the Government Statistician show that the area planted to canary seed was increased to 31,250 acres, from which a yield of 3,880 tons was obtained. The season was unusually favourable for winter-growing crops on the Darling Downs. Nevertheless, an increase of approximately 80 per cent. in the area planted was completely unjustified. The canary seed requirements of Australia have been estimated at approximately 2,500 tons annually. However, the evil effects on the industry of the abnormally high prices of the two previous seasons, whilst on the one hand stimulating production, on the other hand caused consumers to seek less costly substitutes (which, in such cases, are not readily eliminated from the market after the need for their use has passed), and discouraged the keeping of caged birds.

In January, 1939, in addition to the crop abovementioned, Queensland had a carry-over from the 1937-38 season of 396 tons. To this there had to be added the production of the Southern States, approximately 500 tons, with a small carry-over from the previous season, making in all an available supply of some 4,800 tons.

It is estimated that somewhere in the vicinity of 2,500 tons of this season's seed had already been disposed of by growers direct to outside buyers before the reorganisation of the Board became effective.

At the commencement of the season merchants were prepared to pay as much as £35 per ton for seed, but, as the result of selling pressure and lack of marketing control, the price rapidly declined, and some sales were made as low as £9 per ton rails sending station. A total of 1,376 tons 6 cwt. 2 qr. of cleaned commercial seed was delivered to the Board, but, owing to the fact that the market had been so considerably over-supplied at the commencement of the season, most of this seed was still on hand when the new season's crop became available. For the first time the system of grading seed on the farm was in operation, and for the most part has proved satisfactory. On the 21st November, 1939, a first advance of £8 per ton was paid to growers, the necessary accommodation being provided by the Commonwealth Bank, subject to a guarantee of the Queensland State Government.

1939-40 Season.—Although the statistical position was unsound, and despite advice from the Board, growers continued to produce canary seed faster than it could be consumed. This Pool was closed for deliveries on the 8th May, 1940, the total quantity of seed taken into store being 1,782 tons 19 cwt. 0 qr. 9 lb. of commercial seed, on approximately 1,200 tons of which a first advance of £8 per ton has also been paid. In this case the Board is being financed by the Bank of Australasia, but it has again been necessary for the Government to provide a guarantee of repayment. The Government's guarantee is for an amount not to exceed £9,600, the whole of which is required to cover the moneys already paid by way of first advance. Unfortunately when applying for a guarantee in the first place, and when paying the advance at the rate of £8 per ton, the Board under-estimated, by approximately 600 tons, the quantity of which it was anticipated would be delivered to the Pool. The Board, so far, has been unable to command finance with which to pay a first advance to the growers of the 600 tons delivered late in the season.

It is a condition of the financial arrangement that sales must be confined to 1938-39 season's seed until the amount advanced by the Commonwealth Bank of Australia has been paid.

In spite of the almost unanimous support promised to the Pool, it is estimated that somewhere in the vicinity of 500 tons of seed has been sold to interstate buyers direct.

1940-41 Season.—Growers have been strongly advised to refrain from planting canary seed for this season. In cases where it has been planted as a dual purpose crop the growers concerned are being advised to graze it off completely, or convert the crop into hay.

No nominations were received for the election of growers' representatives to the Board for the ensuing term of three years. The Minister, therefore, reappointed the two retiring members.

CHEESE BOARD.

The Board is empowered to function to 31st December, 1941.

Production.—The quantity of cheese produced during the past year was 13,845,131 lb., which, whilst being slightly above the average figure of recent years, nevertheless represents a decline of 1,929,816 lb. when compared with the previous year's record figure of 15,774,947 lb.

Naturally, cheddar cheese constituted the great bulk of the output during the year, but small quantities of fancy varieties were also produced, viz.:—Roman, 168,018 lb.; and Gruyere, 51,958 lb.

Australian Production.—One of the most notable features in the development of the dairying industry in Australia since the Commonwealth Equalisation Plan came into operation has been the marked increase in the production of cheese in the States of South Australia and Victoria, as a result of which the Australian annual output has grown from a little over 36,000,000 in 1934-35 to 67,853,042 lb. for the year just ended.

Quality.—A comparison of the quality of Queensland cheese submitted for grading for export over the past four years is obtainable from the following statement of percentages, which is recorded by courtesy of the Department of Commerce. Comparable figures of quantities graded are not available for the years 1936-37 and 1937-38, as, previously, quantities were recorded by the Department of Commerce on a crate basis:—

Grade.	1936-1937.	1937-1938.	1938-39.		1939-40.	
	Per cent.	Per cent.	Lb.	Per cent.	Lb.	Per cent.
Choicest	0-21	1-13	267,326	2-68	590,217	6-77
Firsts ..	39-37	35-60	3,765,297	37-75	2,918,386	33-44
Seconds ..	57-65	61-29	5,559,720	55-74	4,549,142	53-27
Thirds ..	2-51	1-75	355,896	3-59	496,962	5-69
Rejects ..	0-26	0-23	26,660	0-24	72,891	0-83
	100-00	100-00	9,974,899	100-00	8,627,598	100-00

As the figures shown in the foregoing table indicate only the quantity of cheese submitted for export, they cannot be taken as a reliable indication of the quality of the total output. To obtain this it is necessary to take into account the quality of the cheese sold on the local market and to processors, which is estimated at 80 per cent. choicest and first grade and 20 per cent. second grade.

During the year action was taken by the Department to have the cheese sold on the local and process markets examined by State grading officers. It will be possible in the future, therefore, to obtain more accurate information in this regard.

Disposals and Values.—Sales of cheese during the year ended 30th June, 1940, totalled 13,848,623 lb., which were disposed of to the following markets, viz.:—Local, 3,246,497 lb.; to Processors, 1,294,500 lb.; and Overseas, 9,307,626 lb.

The net Commonwealth equalisation prices per lb. on the various markets are shown hereunder with prices for the previous year in parentheses.

Local 10-099d. (10-148d.), Process 8-73d. (8-69d.), and Overseas 7-37d. (6-35d.).

The net average equalisation price for all sales made by the States operating under the Equalisation Plan was 8-165d. per lb. compared with 7-675d. for the previous year.

The 1939-40 figures may be subject to slight amendment as interim figures only have been taken in account for May and June.

There was no alteration in the local and process prices during the year, these having remained at 10½d. per lb. (for mediums) and 9d. per lb. respectively; the value of the Equalisation Plan in eliminating local price fluctuations being again demonstrated.

To indicate the approximate annual value of the production in Queensland over the past four years, the following statement has been compiled by taking the production, as shown earlier in this report, deducting therefrom 4 per cent. for shrinkage, and applying net equalisation values.

Year.	1936-37 ..	Approximate Value.	£
"	1937-38 ..	" ..	246,956
"	1938-39 ..	" ..	384,627
"	1939-40 ..	" ..	484,291
"	1939-40 ..	" ..	452,182

Broadly speaking, these figures represent the net returns to manufacturers after allowing for all marketing costs other than transport to agents' floors or port of shipment and commission in excess of 3 per cent.

Effect of War Conditions.—The first war-time cheese contract between the Australian Government and the British Ministry of Food operated from the 20th November, 1939,

until the 30th June, 1940. The point of sale was f.o.b. Australian port. Contract prices expressed in f.o.b. values, Australian currency, were as follows:—

		Per cwt.
		s. d.
Choicest and first grade		76 6½
Second grade		74 0½
Third grade		71 6½

The contract was in respect of a quantity of 13,000 tons of cheese, which is on the basis of 16,500 tons per annum. Payment was made 90 per cent. on shipment and 10 per cent. within twenty-eight days after arrival, or, in the event of the vessel being lost, of the estimated due date of arrival.

There was no hold-up in shipments over the period, and consequently the question of additional land storage did not arise.

Advertising.—The Board's expenditure on advertising has been judiciously directed towards emphasis of the value of cheese for human nutrition. Every opportunity was taken to ensure that cheese would be given its rightful place in the wide-spread attention being given to this subject throughout the nation.

The Board made arrangements with the Director-General of Health for the preparation and distribution of diet charts for school children, emphasising the importance of cheese. An amount of £100 had been made available by the Commonwealth Dairy Produce Equalisation Committee, Ltd., to be applied in part payment of the cost of these charts.

Local Market.—The Board realises fully that if the consumption of cheese locally is to be increased the major consideration must be quality, interwoven with which is also the question of providing cheese of different stages of maturity in order to cater for all tastes.

Accounts and Finance.—The total collections for administration purposes for the year under review amounted to £1,287 13s. 5d., this being £472 18s. 6d. less than in the previous year, when the rate was ½d. per cwt. higher. The balance outstanding from factories at the end of the year was £356 16s. 5d., as against £440 7s. at the end of the previous year.

The surplus for the past year was £132 2s., which has increased the Board's total funds to £2,312 13s. 8d., of which £1,500 was at fixed deposit at the 30th June, 1940.

Of the total expenditure during the year, precepts for the Council of Agriculture and the Dairy Cattle Improvement Board accounted for £344 10s. and working expenses £844 16s. 5d. In terms of production, precepts represented .60d. per 100 lb. of cheese manufactured and other expenses 1.46d.

COTTON BOARD.

The Board is empowered to function to 31st December, 1941.

It is with regret that a record is made of the death of Mr. F. A. Kajewski, of Ma Ma Creek, which occurred on 21st September, 1939. Mr. Kajewski had represented the Lockyer District as a member of the Cotton Board since its inception in 1926. Mr. J. A. Peach, of Ropeley East, Gatton, was elected to the vacancy in December, 1939.

1937-38 Season.—The quantity of seed cotton received and ginned was 13,687,872 lb., from which 4,773,936 lb. of lint were produced.

Payments were made to growers totalling £221,237 18s., which averaged 3.879d. per lb. of seed cotton, or 11.122d. per lb. of raw cotton lint. These payments included Commonwealth bounty at the rate of 5.337d. per lb. of raw cotton, the high rate of bounty being due to the very low prices for cotton ruling overseas.

By comparison, the payments for the 1936-37 season were at an average of 3.967d. per lb. of seed cotton, or 11.373d. per lb. of raw cotton lint, of which 8.936d. was provided from Cotton Board Funds, and 2.437d. from Commonwealth bounty.

Proceeds from the sale of lint amounted to £126,270 11s., representing an average price of 6.35d. per lb., as compared with 8.57d. per lb. for the previous season. The profit on hedge transactions amounted to £3,015 6s., or .15d. per lb. Including this profit, the net realisation was 6.50d. per lb., compared with a net realisation of 9.50d. per lb. for the previous season.

The total quantity of seed recovered was 8,635,503 lb., or 63.089 per cent. of the seed cotton received. Of this quantity, 7,265,200 lb. were treated in the oil mill up to 31st December, 1939, supplemented by 42,357 lb. of seed of the previous season, plus a quantity imported from East Africa to ensure that, despite low production due to drought conditions, the Board would be enabled to meet its commitments for oil supplies.

Gross sales of products of seed so treated during the season amounted to £720,250 19s. 2d., which represents 1.3d. per lb. for all seed treated. After deducting costs of treatment, production, and marketing of these products, the

net proceeds are distributed to the growers as supplemental to the payment of £4 per ton for their cotton seed, and is included in one of the seasonal advances.

A deduction of .115d. per lb. of raw cotton was made from growers and transferred to the Working Account Reserve Revolving Fund. Total deductions amounted to £2,275 16s. 6d. and represented 1.98 per cent. of the aggregate net realisations.

Each grower concerned is credited with his proportion of the total deduction. Deductions are made from growers' accounts each season and the fund is continually revolving so that ultimately each grower's contribution towards the financing of his organisation is returned to him. Repayments made during the period under review represent a return to growers of the deductions made in 1930, amounting to £2,267 10s. 6d.

1938-39 Season.—Early seasonal conditions did not favour the planting of cotton, and many growers had been discouraged by the poor crops of the two previous seasons. Final returns revealed that the area planted was 41,112 acres, as compared with 65,796 acres in the previous season. Returns were received from 2,409 growers, whereas in the 1937-38 season 3,657 growers were engaged in the production of cotton.

Notwithstanding the reduced acreage, favourable conditions during the growing season resulted in an increased output. The production of seed cotton amounted to 17,527,709 lb., which yielded 6,182,808 lb. of raw cotton lint, the equivalent of 12,447 bales, as compared with 9,654 bales of raw cotton lint produced in the previous season.

The following payments were made to growers, expressed as averages for all classifications of hand-picked and snapped cotton:—

	Per lb. Raw Cotton.
	d.
First advance payment	 8.2664
Second advance payment	 0.8000
Third advance payment	 1.1143
Fourth advance payment	 0.6000
Final advance payment	 0.4600
Total	 11.2407

There is included in the abovementioned advances payment to growers at the rate of £4 per ton for the cotton seed contained in their seed cotton, involving an amount of £20,000.

The aggregate net realisations due to growers for the season amounted to £164,719 2s. 2d.

The first advance payment included Commonwealth bounty, as prescribed by *The Raw Cotton Bounty Act of 1934*. The bounty was at the basic rate of 4½d. per lb. when the Liverpool spot price was 6d. per lb. for American middling grade of raw cotton, but varied according to the grade of the cotton and according to fluctuation in the Liverpool price—i.e., the rate of bounty moved one point up or down for every point rise or fall above or below 6d. per lb. in the Liverpool price.

Of the final advance of .46d. per lb. of raw lint, a net payment was made to growers of .333d. per lb., and the balance of .127d. per lb. retained and paid into the Board's Working Account Reserve Revolving Fund.

The season's crop of seed cotton contained 35.274 per cent. of lint. The average return of 11.2407d. per lb. therefore, when expressed in terms of seed cotton, would indicate an average return of 3.965d. per lb. The average, however, was depressed because of the large proportion of snapped cotton in the deliveries; a total of 4,372,194 lb. of the seed cotton deliveries had been picked by this method. Actually, growers who delivered all hand-picked cotton received as much as 4.25d. per lb. of seed cotton.

Renewal of Bounty.—*The Raw Cotton Bounty Act of 1934* terminated at the end of the 1938-39 season. With the object of determining the nature of the assistance to be granted in the future, the Commonwealth Government instructed the Tariff Board to conduct an inquiry into the cotton-growing industry. The Tariff Board held an inquiry in Sydney and Melbourne during September, 1938, and presented their report to the Commonwealth Government in April, 1939. The Tariff Board's recommendations that raw cotton bounty payments be reduced by 1d. per lb. of raw cotton lint below the rate of 4½d. per lb., paid in 1938 and 1939, was not known to the Cotton Board until the report had been tabled in the House of Representatives on 22nd September, 1939. A Raw Cotton Bounty Bill was introduced to Parliament just prior to the Parliamentary recess, but it was not then proceeded with by the Commonwealth Government.

With the assistance of the Minister for Agriculture and Stock (Hon. F. W. Bulcock) the Cotton Board submitted a case for the payment of a higher rate of bounty for the initial transition period during which it was intended to change over a considerable portion of the cotton-growing industry from dependence upon natural rainfall conditions to a form of production under which natural rainfall would be supplemented by artificial irrigation. This Department and the Cotton Board had, in co-operation for a number of years, carried out experiments designed to provide the necessary guidance for such a change.

The Commonwealth Government, in order that there should not be further uncertainty and delay in respect of the season's planting, thereupon announced that the previous season's bounty rate of 4½d. per lb. of raw cotton would continue to operate for the 1940 season. A further announcement subsequently was made to the effect that the bounty would be extended as from December, 1940, for a period of five years on a sliding scale as recommended by the Cotton Board, viz:—a bounty rate of 4·75d. per lb. of raw cotton lint for the 1941 season, and thereafter decreasing by ·25d. per lb. and each year until 1944, after which the rate for 1945 (the final year of the bounty period) shall be reduced by ·50d. to 3·50d. per lb. In every case the indicated bounty rate is to operate when the Liverpool spot price is 6d. per lb., as in the former bounty period, with compensating rises and falls in bounty for fluctuations in the Liverpool price, but in no circumstances will the bounty be allowed to exceed 5½d. per lb. The total amount to be made available to pay the bounty shall be £150,000 per year. Any portion of that amount not spent in any year is to be available for bounty payments during the remaining years of the bounty period. The Queensland Government, for its part, is to implement certain undertakings calculated to bring about an increase in cotton production, including conversion of cotton production from dry farming to irrigation. Legislation covering the renewal of the raw cotton bounty is to be introduced in the Federal Parliament during the coming session.

Cotton Picking Awards.—In May, 1940, the Cotton Picking Award was varied by the Industrial Arbitration Court of Queensland. By this determination the payment of 4s. per week (which formerly had to be added to the earnings of cotton-pickers working under contract rates) has been eliminated, and the contract rates increased by 1s. per 100 lb. of seed cotton for the ordinary and clean-up picks, and by 6d. per 100 lb. for the snap pick. The new picking rates are as follows:—

Ordinary pick	..	12	6	per 100 lb. seed cotton
Clean-up pick	..	15	0	per 100 lb. seed cotton
Snap pick	..	6	0	per 100 lb. seed cotton

Mechanical Cotton Picker.—During the year under review the Cotton Board imported from the United States of America, for experimental purposes, a mechanical cotton picker, manufactured by the Rust Brothers. The total cost of the picker with spare parts delivered to the Board at Whinstanes was £1,848, of which the Commonwealth Government paid by way of subsidy the sum of £250. Mr. F. K. Carter, the Board's oil mill and works manager, visited the United States for the purpose of bringing out the picker, and incidentally, to see it and other kinds in operation there, where such machines are still in the experimental stage of development.

1939-40 Season.—It is estimated that approximately 40,000 acres have been planted with cotton. The delay experienced in connection with the continuance of the bounty militated against an increase in the area planted, particularly where any increase in area may have been dependent upon the installation of plant for irrigation. Seasonal conditions have not favoured the crop, and it is not anticipated that the yield will exceed approximately 10,000 bales of cotton lint. The quantity of seed cotton received at the ginneries up to the 30th June, 1940, totalled 8,605,496 lb., from which there has been ginned 2,819,467 lb. or the equivalent of 5,661 bales of raw cotton lint. It is estimated that the requirements of Australian cotton spinners for the year 1940 will amount to 60,000 bales of raw cotton lint, which represents an increase of 100 per cent. on the requirements for 1939. Cotton is a commodity of vital importance to the country for defence purposes in these times of national emergency. There is a necessity also to conserve overseas credits for the purchase of wartime needs, and the extent to which Australia's cotton requirements can be produced locally will facilitate the purchase overseas of other essential goods. It is estimated that the Australian cotton spinners' requirements of lint for 1941 will have increased to about 100,000 bales.

EGG BOARD.

In December, 1938, the operations of the Board were extended without opposition until 31st December, 1944.

Supplies.—The quantity of eggs handled by the Board and its agents for the twelve months ended 29th June, 1940, was 5,355,875 dozen, compared with 4,754,091 dozen for the previous year, an increase of 12·6 per cent. Of the total receipts 3,944,102 dozen were received at the packing floors of the Board, and 1,411,773 dozen were delivered to the Board's authorised agents. The net average price, all grades, returned to growers for eggs delivered for the year ended 29th June, 1940, was 11·919d., by comparison with 1s. 1·099d. for the previous twelve months. It is probable that the net average price of 11·919d. will yet be increased as a result of a bonus to 1939-40 suppliers from profits made on exports.

Disposals.—Sales within the State for the period under review were almost 14 per cent. greater than those for the previous twelve months. Eggs cold-stored (111,630 dozen) decreased by almost 29 per cent., and the quantity of eggs sent to Southern markets (352,050 dozen) declined by 1½ per

cent., compared with the previous year's figures. However, the quantity of eggs exported overseas increased by almost 14 per cent.

Surplus stocks transferred by agents to the Board's floor amounted to 344,016 dozen, and 230,816 dozen were converted into pulp.

Export.—Packing for export began on 3rd July, and was continued until 30th December, 1939. The total shipments amounted to 52,051 cases (30 dozen each), or 1,561,530 dozen, compared with 1,372,590 dozen for the previous year. Shipments by the first two or three vessels were as usual consigned to the Board's agents in the United Kingdom, but on the outbreak of war a contract was made with the British Ministry of Food. Taking all the circumstances into consideration, the contract was a good one. It was on an f.o.b. basis, ocean freight, marine and war risk insurance, being for the Ministry's account. These latter increased to such an extent after the contract was completed that the value of the contract became greatly enhanced. The average net return, including all categories, was 1s. per dozen. The British Ministry of Food, so far as it was possible, made use of the agents who formerly had handled the Board's eggs so that established connections would be maintained. The Ministry of Food directed shipments to whichever port the exigencies of the situation demanded.

Realising the difficulties to be encountered in shipping after the outbreak of war, and that perishable commodities might be subjected to abnormal and trying conditions of transport, the greatest care was taken in the selection, testing, grading, and packing of the eggs for overseas.

Although the voyages of certain vessels freighting eggs to the United Kingdom were very protracted owing to deviation of route and other causes, reports concerning the quality of the Board's packs were satisfactory. An analysis of the reports by the grading officers in the United Kingdom received through the Department of Commerce discloses that contrary to expectations the quality of the eggs in the earlier shipments was not so good as that of the quality of the eggs in the later shipments. As the reverse is the normal position, the Board is of the opinion that the conditions under which the early eggs were transported had a decided bearing on the matter. The best report of all was that with respect to eggs packed in the middle of November and shipped at the end of that month.

The first war-time egg contract entered into between the Commonwealth Government and the British Ministry of Food covered all eggs packed for export up to the 31st December, 1939. The point of sale was f.o.b. Australian port, and the contract prices, in Australian currency, per long hundred (120) were as follows:—

13½ lb. and 14 lb. packs	..	..	9 10·83
15 lb. and 16 lb. packs	..	..	12 2·87
17 lb. and 18 lb. packs	..	..	12 4·25

Payment was made, 85 per cent. on shipment and 15 per cent. within twenty-eight days after arrival, or due date of arrival, if the vessel be lost.

Alteration of Grade Designations.—Since the inception of the Board the designations "first," "second," and "third" had been used to describe the various weight standards into which new laid eggs had been graded. For some time the Board had inclined to the opinion that such designations were liable to be misinterpreted and regarded as varying degrees of quality. It was decided to replace these descriptions by the grade designations "hen," "medium," and "pullet," the three weight standards into which eggs of new-laid quality are graded. This it was considered would have the effect of removing confusion in the minds of buyers and would bring the Board's grade descriptions into line with those used in the other States of the Commonwealth.

Branded Q.E.B. Eggs.—The Board's stamped eggs are finding increasing favour with the public. It is noteworthy that in the months December, January, and February, when temperatures are highest, stamped eggs were in greatest demand.

Re Stamping of All Eggs Offered for Sale.—At a conference of growers held at Toowoomba it was suggested that the Board, in the interests of consumers, make representations to the Hon. the Minister for Agriculture and Stock requesting that all eggs offered for sale, and not subject to the Board's control, be branded, so that they could be traced to the source of origin and, in the event of inferior quality or defects, complaints could be traced to the parties concerned. If it were incumbent upon all persons offering eggs for sale to brand their eggs with a distinguishing mark there is little doubt that greater attention would be given to the protection of quality, with advantage to the public. It would also be a protection to the Board. This matter is still under consideration.

Advertising.—During the year the Board extended its advertising to the screen. A film depicting "shots" taken on a local poultry farm, and the grading, stamping, and packing of eggs on the Board's packing floor, is now being shown at city and suburban cinemas.

Heat Wave Losses.—During the heat wave at the end of January, 1940, there was heavy mortality in the utility flocks. The losses reported to the Board totalled 50,000, the older fowls being most seriously affected. These losses and the detrimental effect on the fowls which survived resulted in a shortage of eggs for several weeks.

Experimental Work.—The Board, in conjunction with the Egg Producers' Council, has continued to co-operate with the Council for Scientific and Industrial Research in experimental work in connection with eggs.

Stabilisation of Egg Pulp Prices.—The agreement made in 1938 between the principal pulp manufacturers in the various States of the Commonwealth for the stabilisation of egg pulp prices was renewed for the season 1939-40, and operated very satisfactorily. A new agreement has been entered into for season 1940-41.

FRUIT MARKETING.

PINEAPPLE SECTION.

Production.—No marked increase in pineapple production was recorded as in the previous financial year. Heavy losses from sunburn occurred with the summer crop. Production totalled 1,319,539 $1\frac{1}{2}$ -bushel cases, as compared with 1,432,853 $1\frac{1}{2}$ -bushel cases in 1938-39.

Cannery.—The canneries were again called on to handle approximately half the total pineapple production, although the quantities processed, 259,614 cases ($1\frac{1}{2}$ -bushel) from the winter crop and 390,518 cases from the summer crop, were not so high as those of the previous financial year, which embraced two record crops in the winter crop of 1938, 331,835 cases and the summer crop of 1939, 438,989 cases.

Cannery operations were entirely satisfactory and all fruit was handled without loss to the grower. The price paid to growers for the winter pack was £7 6s. 8d. per ton, f.o.r. grower's station, with growers meeting all freights in excess of 6d. per case. They had, however, agreed to the deduction of £1 per ton for the purpose of creating an export reserve fund to supplement the grant from the Fruit Industry Sugar Concession Committee and a further 1s. 8d. per ton for the purpose of providing a fund for publicity work in Australia. These deductions, with the further contribution of 10s. per ton towards the half interest in Queensland Canneries, made an initial payment f.o.r. of £5 15s. per ton.

On the total export realisation of the 1939 packs, it was found that with a small drawing on the advertising fund it was possible to refund 10s. per ton to growers. Further, the Committee of Direction rebated to growers 4s. per ton from freight and handling margins. Growers, for the winter pack, therefore, received a total payment of £6 19s. per ton, including 10s. per ton credited as cannery shares.

Sales of the winter pack both in Australia and overseas were satisfactory, with the result that an increase in price was obtained for the 1940 summer pack, growers receiving £8 11s. 8d. per ton f.o.r. grower's station. The principle of creating an export reserve fund was again followed, but 10s. per ton was considered adequate for this purpose. An additional 1s. 8d. per ton was again reserved for advertising purposes. These deductions of 11s. 8d. per ton, with the contribution of 10s. per ton to the cannery purchase fund, gave an initial payment to growers of £7 10s. per ton f.o.r.

Export Markets.—(a) *Great Britain.*—Soon after the outbreak of war the announcement was made by the then Minister for Commerce that the British Government would purchase the whole of the exportable surplus of the 1940 Australian canned fruit packs. At the request of the pineapple section, canned pineapples were excluded from this offer. This action has been fully justified because negotiations for the sale of canned fruits to the British Ministry of Food were protracted and uncertainty existed before a deal was finally completed at 750,000 cases for the year—not the whole of the exportable surplus—at prices less than were expected.

As the negotiations did not include canned pineapples, it was permissible to take independent action, as a result of which satisfactory sales were made on the British market. The industry was saved storage charges in Australia and shipments as they arrived were permitted by the British Ministry of Food to go immediately into buyers' hands. Of the orders received for the summer pack, 21,000 cases remain to be shipped ex the winter pack of 1940.

The pineapple industry, which this year has applied to the Fruit Industry Sugar Concession Committee for a grant of £5,000, fears that the repercussions on the canned peach, pear, and apricot sections of the long negotiations with the British Ministry of Food and the unsatisfactory nature of their conclusion may be the cause of a reduction of the allocation to the pineapple industry. The pineapple section, in its voluntary setting aside of sums to assist in stabilisation, both overseas and in Australia, is the only section of the canned fruits industry to adopt such a policy of self-help.

(b) *Canada.*—With the restrictions imposed it is apparent that the British market for canned pineapples will be seriously curtailed, and the industry will need to develop the Canadian market more fully. Fortunately, the Canadian market has been responsive this year, and there is every indication that it will offer a rapidly expanding outlet for Queensland canned pineapples.

Growers are now co-operating in the grading of their winter pineapples so that a maximum quantity of this fruit can be packed for the Canadian market, for which substantial orders have been received.

Australian Market.—Sales on the domestic market have been good, and the year was commenced with clear boards. The position has undoubtedly been assisted by judicious publicity. This has been undertaken on an industry basis, canners subsidising £1 for £1 the sum set aside by the Pineapple Committee.

Growers' Own Cannery.—Queensland Canneries Pty. Ltd., in which the growers own a half share—the purchase price of the half interest being met by the deduction of 10s. per ton from the growers' factory price on the revolving fund principle—was registered on 1st August, 1938. The directors' report and balance-sheet for the first year of operation, eleven months to 30th July, 1939, showed heavy stocks on hand at the end of the first financial year, and, unfortunately, no profits available for distribution. The year under review has been much more satisfactory, and it is expected that a dividend will be paid.

Fresh Fruit Marketing.—Owing to the factory outlet there was no acute problem on the fresh fruit markets, and for the intermediate crops particularly very good prices were returned. During the main crops, when canneries were accepting fruit, there was noticeable at times an uneven distribution of consignments over the main markets. The over-supply of any one market can immediately result in its returning less than factory parity. It would undoubtedly be of value to the growers if they gave the Committee of Direction certain powers to adjust supplies to market to each market's capacity.

New Zealand Market.—Since the readmission of pineapples to the New Zealand market in October, 1933, this market has proved a valuable one for the Queensland industry, each year showing an expansion until in 1938-39 exports to that country totalled 29,593 $1\frac{1}{2}$ -bushel cases. Although the quantities exported each year were small in comparison with the total crop, the value of the outlet to the industry lay in the direction that (1) the specialty pack required for New Zealand acted as a spur to a general improvement in growers' pack; (2) it could be and was used to relieve the Sydney market, thereby enhancing returns for all consignments on that market.

To the individual grower prepared to take the extra care in picking, handling, packing, and despatch of the fruit to the New Zealand market it proved particularly remunerative.

The announcement in December, 1938, therefore, of the gazettal by New Zealand of certain import and export licensing regulations by which the Government would issue licenses limiting the importation of pineapples for the first half of 1939 to the quantity imported in the corresponding period of 1938 caused some concern to the industry. Actually, however, no restrictions were imposed by the Government, although with the outbreak of war in September, 1939, the handling of the New Zealand export trade in Sydney by the Committee of Direction Branch there became very involved and costly, and exports were automatically reduced owing to the difficulty of securing adequate space.

In February, 1940, an intimation was received that the New Zealand Government would not issue further licenses for the importation of pineapples, in order to conserve overseas credit and to free the New Zealand Government from all possible competition in the sale of the apple and pear crop which it had acquired. Concentrated effort was immediately made to secure at least a partial lifting of the embargo, and finally the personal representations of the Premier of Queensland, the Hon. Forgan Smith, to Ministers of the New Zealand Government, were instrumental in securing agreement to the importation of Queensland pineapples to a limited extent. The extent to which the market was reopened was 25 per cent. of the c.i.f. value of importations for the corresponding period of 1938, a year of high imports but low c.i.f. values.

Under such conditions for the market to be used in the best interests of the industry it is obvious that the export business will have to be controlled, and with the full approval of the Pineapple Committee action to this end has been taken.

BANANA SECTION.

From a marketing point of view, the year has been a particularly satisfactory one for banana growers, excellent prices being the rule for most of the year on all markets. In Sydney prices as high as 30s. per case gross were realised at times, while in Brisbane the gross top price was 25s., being 5s. in excess of the gross top price of the previous year. In the Brisbane market as a result of education by the

Committee of Direction, growers distributed evenly their marketing between cases and bunches, although the quantity marketed on the bunch showed an increase on the quantity so marketed the previous year. The satisfactory nature of the operations of the Brisbane green case and bunch banana floor during the year ending June, 1939, made a rebate of commissions possible. An amount of £759, representing a rebate of 20 per cent. of commission charges, was returned to growers who supported the floor during that year.

In March last a suitable building was secured in upper Turbot street where bunch banana sales are now being conducted by the organisation. Growers have apparently appreciated the improved facilities provided, as quantities consigned to the Committee of Direction floor for sale totalled 46,715 bunches, as against 33,899 handled last year. Expressed in percentages, the Committee of Direction handled 11.42 per cent. of the total bunches marketed, in comparison with a percentage of 9.2 the previous year.

Banana Publicity.—Advertising in the Southern States was conducted according to a plan entered into conjointly by the Committee of Direction and the Banana Growers' Federation of New South Wales, whereby the cost was apportioned on the basis of B.G. F., 4; C.O.D., 1. This is the ratio in which it is considered the banana production of the two States is marketed in New South Wales and Victoria. The Committee of Direction met the full cost of advertising in Queensland.

CITRUS SECTION.

Factory Operations.—All citrus fruits offering were accepted by canners. Increased quantities of Lisbon lemons and Sevilles were placed over the quantities taken the previous year. At the commencement of the 1940 season, there was a general shortage of lemons in Australia, inquiries being received from the South as to prospects of the Queensland lemon crop, with a view to Southern canners securing portion of the crop. Inquiries also were received through the Department of Commerce in regard to the availability of Queensland lemons for export to Great Britain, because of the fact that, during the war, supplies were not likely to be forthcoming from Mediterranean countries. These factors assisted in securing a price increase of £3 per ton for premium and first grade lemons. Grape fruit also was increased £1 per ton, the price of all other varieties of factory citrus remaining the same.

Experiments have been conducted in the canning of true type grape fruit, but have not proved successful.

Efforts were again made to obtain the co-operation of Southern citrus organisations in an approach to the Federal Government for an embargo to be placed on Palestine citrus during the months when Australian production was available.

Sydney Market.—The Sydney market has proved a very attractive one for Queensland mandarin growers. It is considered that this is a lasting benefit obtained from the mandarin bonus scheme, which was in operation two and three years ago. This scheme was designed to encourage and establish a market for good quality mandarins in Sydney, with a view to relieving pressure on the Brisbane market.

OTHER FRUITS SECTION.

Papaws.—Because of a smaller crop of papaws, the quantity of ripe fruit handled by canners was only 328 tons, as compared with 500 tons in the previous year. The quantity of green papaws handled was heavier, 107½ tons, as compared with 74 tons. This was due mainly to the fact that the principal processor of green papaws had developed an excellent trade on the British market for his chutney. Prices for both ripe and green papaws remained the same as in the previous year, viz., £10 10s. per ton and £7 15s., respectively. With an adequate factory outlet, and with a shortage of supplies at times, the fresh fruit market proved generally remunerative.

Strawberries.—A record crop was handled, the total tonnage absorbed by factories being 197 tons, compared with the previous year's record of 190 tons. Factories accepted deliveries right up to December.

In the course of the season experiments were conducted in the forwarding of strawberries under dry-ice refrigeration to Mount Isa. The trials proved satisfactory, and the unusual appearance there of strawberries was welcomed by the people in this far distant centre.

Passion Fruit.—There was only a very light crop of passion fruit, and quantities handled by the factory department were still further depleted by reason of the fact that growers sold direct to a Southern processor. A price increase of ¼d. per lb. was obtained, and 47½ tons were treated, as compared with 179 tons last year.

Figs.—A record crop of figs was handled, factories accepting 161 tons, an increase of 31 tons on the previous season. Growers were assisted in the clearance of their crop by a distribution scheme undertaken by the Committee of Direction.

An effort was made to obtain an increase of ¼d. per lb., but to have gained this would have resulted in very restricted canning. In view of the large crop offering, it was advisable to have a maximum quantity canned, rather than a small quantity at a high price.

Tomatoes.—The Redlands Tomato Council has been widened to embrace metropolitan tomato growers, of which a representative is now a member of the Council. Since its inception, this energetic body has been insistent in its efforts to improve marketing, particularly in the disposal of the tomato crop on the Sydney market, and each season has seen some improvement made. A co-operative effort with New South Wales growers and the Department of Agriculture in that State has been made with a view to tightening up grade and maturity standards.

DECIDUOUS SECTION.

Because of the reduced crops following severe hail storms and late frosts, excellent market prices were realised for the quantities of plums, apricots, peaches, and nectarines available.

For grapes and tomatoes, the season was the best for many years. Both these fruits were marketed in very heavy quantities in Sydney, the deliveries showing a big increase on any previous year. The marketing of grapes in the South was assisted by the fact that drought conditions there caused a restriction of the southern crop, with naturally a stronger demand for the Queensland product. The flavour of the Queensland grape was generally appreciated, and sound values were realised for substantial shipments. This curtailment of the southern crop proved the Queensland grower's opportunity, and the quality and pack provided should result in a retention of this market in subsequent years. Consignments to Sydney totalled 4,656 cases, the previous year's total being only 437 cases.

The quantity of tomatoes marketed in Sydney from the Granite Belt was 171,255 cases, more than double the previous year's total of 80,079 cases. The pack was outstandingly good, and it was observed that throughout the season there was a strict compliance with grading regulations.

Apple Export.—In spite of the difficulties confronting the Australian apple industry as a result of restricted export markets, Queensland growers were able to export a total of 29,741 cases, of which 22,681 were sent to the United Kingdom, and 6,790 to Eastern markets. This season, the whole of the export business was handled by the Committee of Direction on an f.o.b. basis.

Factory Operations.—The total quantity of Stanthorpe fruits placed with the factories was much less than it has been for a number of years. The total quantity placed of all varieties was 313½ tons, as compared with last season's factory operations of 668 tons. The reason, of course, was the greatly reduced crop.

The only variety of factory fruits to show an increase in the quantity handled was juice apples, canners taking 163 tons in comparison with 149 tons the previous season. This quantity comprised almost wholly hail-marked apples, factory requirements being allocated among those growers who had suffered severe hail losses. In this allocation, growers who suffered a loss in excess of 50 per cent. were given some preference.

BEAN SECTION.

Production.—Production of beans has continued to expand, as shown by interstate consignments. The quantity despatched interstate for the year 1939-40 was 2,224 tons, approximately 274 tons in excess of the previous year.

Conference.—The annual conference of bean growers was held in March last, at which all the coastal bean-growing districts were represented. The conference again agreed to seek an agreement from the Sydney and Melbourne trade, and for the purpose of negotiating the agreements appointed its chairman and the chairman of the Committee of Direction. No difficulty was experienced in securing the agreement with the Southern trade. This was the first occasion that the growers' delegates had had personal negotiation with the Melbourne trade, and, as a result, the concession was gained that the Melbourne trade would sell by weight and, on request by the grower, show such weights on the account sales. This is something which the industry had been wanting for a considerable time, and is a definite gain from the visit of the growers' delegates.

Bean Seed Production Scheme.—Following conferences with officers of the Department of Agriculture, a revised plan was adopted for the scheme of bean seed production. It was decided to have production carried on principally in the Kingaroy district, which, being inland, offered better conditions than did the coastal districts, both from a growing and economic point of view.

GENERAL.

Fruit Selling Agencies.—The various fruit selling activities conducted by the Committee of Direction have continued to progress, notably the section operated by the organisation in the Brisbane Fruit and Vegetable markets.

Brisbane.—This section occupies four stands in the Municipal Markets, Roma street, this space permitting of an adequate display of growers' produce. The success of the year's operations is best gauged in the turnover figures which represent an increase of 20 per cent. on the turnover for the previous financial year, excluding banana sales, which are handled by a separate department.

Sydney.—Despite decreased quantities of the main Queensland tropical fruits consigned to the Sydney market, turnover of the Committee of Direction Fruit and Vegetable Selling Sections there has shown an increase of 3.7 per cent. The principal fruits handled are the tropical varieties. As with the Brisbane section, turnover increases have been progressive over the last few years.

As in previous years, the section demonstrated its value to the Queensland fruit industry by handling commanding percentages of the main Queensland fruits consigned to the Sydney market. This is indicated in the following table:—

	Total Sydney Consign- ments.	Consigned to C.O.D.	C.O.D. Percentage.
	Cases.	Cases.	
Bananas	89,402	22,760	25.46
Pineapples	250,604	74,343	29.66
Papaws	21,794	12,432	57.04
Custard Apples	15,037	6,707	44.6

The Committee of Direction sales section operates on a competitive basis with all other fruit and vegetable agents on the Queensland consigning list, totalling 147. Growers send to it voluntarily. Because of the commanding percentages of bananas, pineapples, papaws, and custard apples handled, this section is able to set a standard both for prices and service. Thus all Queensland growers, whether or not direct consignors to the Committee of Direction benefit through the operations of their own section on a market, which handles between 60 and 65 per cent of Queensland's exportable production of fruit and vegetables.

Rockhampton.—The Rockhampton section always handles a large percentage of the direct consignments from deciduous growers, and last season proved no exception. The branch has operated satisfactorily. The business done by the retail department of the Rockhampton section necessitated the opening of a new shop.

Townsville.—The Townsville wholesale selling floor during the deciduous season handled most of the fruit consigned direct to that centre by growers. Unfortunately, the section, along with all Northern wholesale fruit connections, suffered a very severe reverse during the cyclonic and flood period in February. Railway dislocation caused the branch at times to be completely bare of supplies. Consignments which later arrived by the circuitous Longreach-Winton route naturally were not in a condition to command satisfactory prices. Turnover will show a slight improvement on the figures of last year.

Mackay.—Early in the financial year a fruit selling agency was opened in Mackay. The Branch was badly mismanaged for a commencement, but since the change in management in March last, considerable improvement has been shown. Although the branch was opened originally on a retail basis, the wholesale trade now is being developed. Unrestricted consignments from growers are not sought as, with a limited market, these could lead to an over-supply. A steady connection is, however, being built up as between the floor and growers, working on nominated quantities each week.

Bowen.—The Bowen branch main activities are transport and merchandise sales. The business of the merchandise department in this town has so increased that during the year a new retail shop was opened in the main business section. This has resulted in a further extension of business. There is no fruit-selling floor attached to the Bowen branch, but during the deciduous season some quantities are consigned there by growers.

Fruit Selling Activities Bonus Distributions.—For the financial year 1938-39 an amount of £1,795 was distributed as a rebate of 10 per cent. on commissions on consignments to all of the Committee of Direction fruit-selling sections, covering consignments to Sydney, Brisbane, Rockhampton, Bowen, and Townsville. In connection with Sydney consignments, the receiving and delivery charge of 1d. per case was included in the commission charge for rebate purposes.

This payment of rebate represented the fulfilment of a suggestion made early in 1936, when with the change in management of the Brisbane section, the commission charge was increased to 10 per cent., the rate charged by all other Brisbane agents for the sale of fruit. It had previously been found that on a lower rate it had not been possible to give growers the service which it was considered they regarded as more essential than a lesser commission charge; in fact, this was reflected in the low turnover and consistent losses shown by the section. When making the increased commission charge, the

Committee suggested that should it be found that maximum service could be given at a lesser charge than 10 per cent., this could best be shown by a rebate of commissions.

MERCHANDISE DEPARTMENT.

Continued progress has been made by the Committee of Direction Merchandise Department. Turnover amounted to £73,658, as compared with £52,500 for 1938-39.

This department had a modest beginning in 1930, being created to meet the request of a number of growers who desired to buy fertilisers, &c., on the best possible basis. Each year of operation has shown a distinct increase in turnover, but no increase has been as great as that which has characterised the operation of the financial year under review.

At the completion of the financial year ended 30th June, 1939, the Committee was able to make a rebate to supporters of this Department. An amount of £714 was distributed, representing a rebate of 3 per cent. of the business placed during the year 1938-39 by each individual customer whose account was in a satisfactory condition.

COUNTRY FRUIT AND VEGETABLE DISTRIBUTION SCHEME.

This scheme continues to fulfil the purpose for which it was created, viz., the distribution of fruit and vegetables at reasonable prices to consumers in far-distant country towns. The unit of the scheme is the half-bushel case, which, by special arrangement through the Department of Agriculture and the Queensland Railways, is carried at a flat freight rate of 1s. 1d. per case to railway stations within the scope of the scheme which covers certain defined areas.

Since the inception of this scheme in February, 1935, until the end of June, 1940, a total of 97,728 half-bushel cases have been despatched to consumers. For the financial year just ended, railings totalled 18,472 cases, showing a decrease of 5,000 cases on the preceding twelve months. This decrease was due to the dislocation of railway services due to cyclonic disturbances and floods in North Queensland and the coal strike.

The three "mixed" cases still constitute the most popular lines despatched under this scheme. Of last year's total, these three cases represented 76 per cent. of the railings, the most popular of the three being the case of assorted fruits which covered 43 per cent. of the total railings.

This scheme has a national aspect in that it offers facility for the securing of fruit and vegetables by dwellers in far-distant centres at reasonable cost. The Committee of Direction acts as agent for, and administers the scheme on a non-profit-making basis under the supervision of this Department.

DISTRIBUTION OF FRUIT IN MILITARY CAMPS.

Since the commencement of the war the Committee of Direction has been alive to the necessity of adequate supplies of fruit and vegetables being available to the troops, both in their rations and through the canteens. By arrangement, the Committee undertook to supply military camps with fresh fruit and vegetables, but after a short while, for some reason not explained, the military authorities suddenly terminated the arrangements and decided to obtain their requirements by private tender.

The organisation also has endeavoured to ensure that supplies of fruit were available to the troops through the camp canteens.

QUEENSLAND NUTRITION COUNCIL.

The Committee of Direction has continued its financial assistance to the Queensland Nutrition Council.

REFRIGERATED TRANSPORT.

The Queensland Railway Department has initiated a series of tests in refrigerated transport of fresh fruit and vegetables.

MARKETING AGREEMENTS.

The bean growers were the first to institute the system of marketing their crops under agreements with the Southern trade. Other sections of the industry have been quick to appreciate the benefits accruing from these agreements, and to enter into similar pacts.

CREDIT CONTROL—BRISBANE MARKETS.

During the year an effort has been made at restriction of credit on the Brisbane market. It was agreed by the Brisbane Associated Fruit Agents to reduce the period of credit from one month to a fortnight, and since January, 1940, the practice of sending out fortnightly statements has been in operation. Some measure of success has been achieved, the reform being materially assisted by the Queensland Apple and Pear Acquisition Committee which made it a condition of appointment to its panel of selling agents that the appointee would strictly adhere to the fortnightly credit system.

INTEREST FREE LOAN TO THE COMMONWEALTH GOVERNMENT.

With the consent of the Sectional Group Committees, the Committee of Direction proposes to make an interest free loan of £5,000 to the Commonwealth Government for the duration of the war and six months thereafter. Approval for the making of this loan by Order in Council under section 6 (5) (viii.) of the Fruit Marketing Organisation Act is now being sought.

COMMITTEE OF DIRECTION YEAR BOOK.

The Committee of Direction issued its first Year Book to cover the financial year 1938-39. It was greeted with enthusiasm by growers, containing as it did in ready reference form, items of every day use to them in the marketing of their products, both through the fresh fruit markets and the cannery. The success of the first issue prompted the Committee of Direction to issue a second Year Book to cover the current financial year. This will be available for distribution early in August.

DIRECTIONS AND LEVIES.

The following fruits have been under the control of the Committee of Direction and subject to statutory levies during the year:—

Citrus fruits, for factory purposes;
Deciduous fruits, for factory purposes;
Figs, for factory purposes;
Passion fruit, for factory purposes;
Papaws, for factory purposes;
Pineapples, for factory purposes;
Strawberries, for factory purposes;
Tomatoes—

(a) For factory purposes;

(b) To stabilise the Brisbane market for Stanthorpe-grown tomatoes by prohibiting the sale of "B" grade and small "A" grade tomatoes from such district when the price of "A" grade will not realise a higher gross amount than 4s. 6d. per half bushel case.

REFUNDS MADE TO GROWERS UNDER VARIOUS SYSTEMS OF FINANCE DURING THE PERIOD TWELVE MONTHS ENDED 30TH JUNE, 1940.

Pineapple Funds.

(a) Southern Consignors.—In August, 1939, rebate was made at the rate of 1d. per case to all Southern consignors of pineapples on the Committee of Direction fruit train specials for the six months ended 30th June, 1939. The sum represented by these payments was £742 19s. 2d. Thus the fund which has a fixed capital of £8,000, has revolved up to 30th June, 1939, total surpluses of £13,308 above the fixed capital having been returned to growers. Growers to benefit from this fund are those who have consigned pineapples to the Southern States by the Committee of Direction fruit trains for the years 1924 to 30th June, 1939.

(b) Cannery Consignors.—(i.) Freight and Handling Fund.—On the completion of the winter pack of 1939, a rebate was made to growers of 4s. per ton on the freight and handling margin of 30s. per ton. The sum represented by this rebate was £2,273 15s. 2d. Total repayments of freight margins covering the summer and winter packs of 1939 are:—

Summer, 1939, at 5s. per ton ..	£ 2,678	
Winter, 1939, at 4s. per ton ..	2,273	
		£4,951

The cost of handling the winter pack is always higher than the summer by reason of the fact that greater inspection is involved to cope with black heart losses in the winter fruit. These rebates on the freight and handling margin mean that growers for 1939 received cannery transport and handling services at cost.

(ii.) Export Reserve Fund.—Growers again agreed to the deduction of £1 per ton to assist in meeting export losses in excess of the grant from the Fruit Industry Sugar Concession Committee. Additionally they approved the principle of the retention of a further 1s. 8d. per ton, the collections from this amount to be earmarked for advertising in Australia so as to effect maximum sales on the home market. On the completion of export sales of the 1939 packs early in 1940, it was found that after meeting all export losses in excess of the £4,000 grant from the Fruit Industry Sugar Concession Committee there was not quite sufficient in the export reserve fund to permit a repayment of 10s. per ton. The advertising fund was drawn on so as to refund to growers at the rate of 10s. per ton, the total sum involved in this fund being £8,657 1s. 9d.

Summary of refunds to pineapple growers during financial year 1939-40—

	£	s.	d.	£	s.	d.
(a) Southern Consignors' Fund				749	19	2
(b) Cannery Consignors—						
Freight and handling reserve, winter pack	2,273	15	2			
Export and Advertising reserve	8,657	1	9			
				10,930	16	11
				£11,680	16	1

STANTHORPE FRUIT CO-OPERATIVE HAIL INSURANCE FUNDS.

In December and January, the Stanthorpe district, particularly the Amiens area, experienced the worst series of hail storms for many years. It was then evident that losses would be so heavy that the sum available for distribution from the Hail Insurance Fund would not give adequate compensation to the growers. The rates of compensation in previous years have been—

1936-37	3s. 4d. per bushel (maximum)
1937-38	1s. 10d. per bushel
1938-39	1s. 9d. per bushel

The total assessment of loss for the 1939-40 season is 92,635 bushels, a loss greatly in excess of that of the previous season, assessed at 33,810 bushels. Funds available have permitted an interim payment of 6d. per bushel, the amount distributed being £2,315 17s. 11d. The position of the fund will permit a further payment of .72d. per bushel.

Payments from the Hail Insurance Fund to the end of the 1938-39 season totalled	£ 7,386	s. 16	d. 7
1939-40 season—			
Interim payment at 6d.	2,315	17	11
	9,702	14	6
Plus further payment at .72d.		277	18 1
Anticipated total payment from fund	£9,980	12	7

COMMITTEE OF DIRECTION TRADING ACTIVITIES—BONUS PAYMENTS.

At the end of last financial year, the Committee was able to make a bonus payment to the supporters of certain of its activities, viz.:—

	£	s.	d.
(i.) Fruit selling sections—			
A bonus of 10 per cent. of total commissions was made to growers who consigned to any of the Committee of Direction fruit-selling activities in Sydney, Brisbane, Rockhampton, Bowen, and Townsville during the financial year 1938-39. These payments were made in December, 1939, and totalled ..	1,794	18	9
(ii.) Merchandise Department—			
A rebate of 3 per cent. on all business transacted during the year to each individual customer whose account was in satisfactory condition. Amount so distributed	713	15	5
(iii.) Green Banana Floor—			
A rebate of 20 per cent. of commissions to supporters of the floor. Amount so distributed	759	12	9
Total sum distributed as bonus payments	£3,268	6	11

This distribution is covered more fully in the detailed reports of these respective activities.

INTERSTATE TRANSPORT.

The consignments of fruit and vegetables forwarded by Committee of Direction fruit train specials and by steamer to the Southern markets for the twelve months ended 30th June, 1940, were as follows:—

	By C.O.D. Fruit Train Specials.	By Steamer.	Total.
To—	Packages.	Packages.	Packages.
Victoria	327,158	2,229	329,387
New South Wales	1,191,857	1,993	1,193,850
Total	1,519,015	4,222	1,523,237

FACTORY ACTIVITIES FOR TWELVE MONTHS ENDED 30TH JUNE, 1940.

The following quantities of the various fruits have been handled for factory:—Stanthorpe fruits, 313 tons; citrus, 426½ tons; figs, 164 tons; papaws, 486½ tons; passion fruit, 47½ tons; strawberries, 197 tons; tomatoes, 229½ tons; and pineapples, 18,536½ tons.

APPLE AND PEAR ACQUISITION SCHEME.

After the outbreak of war and the consequent rationing of refrigerated shipping space, on the basis of priority to commodities according to war-time importance, a plan was devised by the Commonwealth Government for the marketing of apples and pears. Exports of these fruits have averaged 4,800,000 cases of apples and 700,000 cases of pears annually.

The plan provided for the acquisition by the Commonwealth Government, under *The National Security Act*, of all apples and pears grown in Australia and not sold by the 1st March, 1940. Certain early-maturing varieties in the Southern States, and a large proportion of the total Queensland production were, therefore, unaffected.

Growers were compensated for the acquired fruit by an advance of 2s. a case on apples and 3s. a case on pears on the basis of 75 per cent. of the fruit on the trees as determined by assessments made by, or under the direction of, officers of the State Departments of Agriculture. A final payment was to be made if, and when, the varietal pools showed a profit. Growers, in addition, were refunded their packing and delivery costs on fruit marketed by them.

The scheme, however, did not take cognizance of production costs in Queensland and parts of New South Wales, where apple growing has been established on the basis of the production of the higher quality, low-yielding varieties, and maturity at a time of the season when competition with the main crops of Southern States is not encountered. To meet this position to some extent, a late amendment of the scheme provided for the payment of an additional 1s. per case on fruit delivered for sale.

A strong, but unsuccessful effort was made to have Queensland exempted from the scheme altogether, or alternatively until the end of March.

The Australian Apple and Pear Board was charged with the administration of the scheme, with the aid of Acquisition Committees appointed in each of the States. The constitution of the Queensland Committee is—Fruit Agents, 3; Committee of Direction, 2; and State Government, 1.

The Queensland Committee constituted under the Board developed a marketing plan within the general scheme, whereby the extensive grower to consumer country order trade, which had been painstakingly built up over the years, would not be entirely disrupted. Such growers were thereby enabled, by purchasing their fruit from the pool, to maintain contact with their clientele.

The same satisfactory basis could not be adopted in the case of growers who had connections established with country retailers, and while an effort was made to protect them from the full impact of the emergency marketing scheme, these growers were among those who suffered a disability.

The quantity of apples in excess of normal to be disposed of on the Australian market was relieved by the shipment overseas of approximately 1½ million cases from Tasmania. In addition, yields were very considerably reduced by drought in the Southern States. On the other hand, the adverse season was the cause of much low-grade fruit being placed on the market. Queensland yields also were reduced by hail damage. The greater part of this State's crop was marketed before acquisition took effect on 1st March, including early export of Granny Smith apples at the end of February.

Up to the 30th June, 1940, the Queensland Committee dealt with 227,803 cases of apples, and 72,364 cases of pears, of which 19,821 cases of apples and 723 cases of pears were Queensland-grown. Thus, of the fruit dealt with up to that time, more than 93 per cent. was grown in other States.

HONEY BOARD.

The Board is empowered to function to 8th March, 1944.

Disposals of honey and beeswax by the Board's selling agents during the twelve months ended 30th June, were almost double those for the previous year, the sales for 1939-40 amounting to 24,987 (60 lb.), tins of honey and 14,034½ lb. beeswax, compared with 12,539 tins and 7,315 lb. respectively in 1938-39. This acceleration in sales may be attributed largely to the increased demand for Queensland honey and beeswax on the part of the local trade, as a result of supplies from other States being short owing to adverse seasonal conditions. The returns to growers in this State were affected, however, by a scarcity of good quality honey, the vagaries of the season being responsible for the delivery of an excess quantity of lower grade honey to the Board.

The maximum and minimum prices realised by the Board's selling agents for honey during the period under review were 6d. and 1½d. per lb. respectively, while the prices for beeswax ranged from 1s. 2d. to 1s. 6d. per lb.

My last Annual Report stated that the Board had under consideration the matter of the appointment of a second selling agent in Brisbane. Negotiations in this regard were finalised by the appointment of the Producers' Co-operative Distributing Society Ltd. as from 1st August, 1939. The other selling agent of the Board is the State Produce Agency Pty. Ltd.

NORTHERN PIG BOARD.

The Board is empowered to function to 31st December, 1940.

Pigs dealt with by the Board numbered 12,912 of a total dressed weight of 1,362,874 lb., as compared with 13,227 pigs weighing 1,376,323 lb. for the season 1938-39. Of the above-

mentioned total 12,038 pigs of an aggregate weight of 1,291,871 lb. were disposed of to the North Queensland Co-operative Bacon Association Ltd., and 874 pigs of 71,003 lb. dressed weight were sold alive to butchers. In addition, the Board disposed of through the abovenamed Association 112 head of cattle of a total dressed weight of 39,353 lb.

The amount paid to growers for pigs and cattle during the year was £33,070 13s. 5d., as compared with £33,265 4s. 3d. for 1938-39.

The average price paid for first-grade pigs was 6.01d. per lb. It is anticipated that this payment will be further increased by a deferred pay of ½d. per lb. to be made later in the year.

Equalisation costs to an amount of £747 18s. 11d. were collected from butchers at the rate of 3s. per pig slaughtered on the pigs purchased by them direct from growers.

During the year it was found possible to make a deferred pay at the rate of ½d. per lb. to growers who had delivered pigs during the half year ended 30th June, 1939. This involved the distribution of £1,371.

There was a shortage of pigs for market demands, particularly since the establishment of the meatworks at Mareeba has facilitated the taking advantage of the export trade.

PEANUT BOARD.

The Board is empowered to function to 27th August, 1947.

1938 Season.—A small portion of this particular season's intake has yet to be disposed of, but it is anticipated that all stocks will be cleared by the end of August, and that a final payment, approximating one-seventh of a penny per lb., will be made to growers.

1939 Season.—The quantity of peanuts received by the Board during this season amounted to 5,607.9 tons, comprising 3,401.7 tons of the Virginia Bunch variety, and 2,206.2 tons of Spanish and Valroy.

The receipts at Kingaroy represented 94.6 per cent. of the total intake, deliveries to the Atherton and Rockhampton depots being 2.2 per cent. and 3.2 per cent. respectively.

A First Advance has been paid to growers at rates averaging 1.72d. per lb. for Virginia Bunch, and 1.5d. per lb. for other varieties.

1940 Season.—Special legislation, "*The Peanut Industry Protection and Preservation Act of 1939*," was enacted for the purpose of further stabilising and improving the efficiency of the peanut industry in Queensland. The Act provides, *inter alia*, for the control by the Board of diseases and insect pests, the establishment of two distinct pools (one of which is limited in size to estimated Australian requirements for edible and planting purposes), and the institution of safeguards in relation to standards of quality of peanuts for human consumption. The maximum quantity which may be delivered to the No. 1 Pool by individual growers is governed by a system of quotas. Deliveries in excess of the allotted quotas are placed in the No. 2, or oil expression purposes, Pool. It is anticipated that the new arrangement will make it easier for the Board to secure bank finance for paying advances to growers.

The Board's receipts to the 30th June from the 1940 crop were:—

Variety.	No. 1 Pool.	No. 2 Pool.
	Tons.	Tons.
Virginia	1,739'05	142'03
Spanish	1,458'61	66'99
Valroy	13'50	0'91
Valencia	1'38	Nil
Total	3,212'54	209'93

It is estimated that a further 2,100 tons will be delivered to the Board by the end of the intake season.

The first advance paid on peanuts placed in the No. 1 Pool was at average rates of 1.98d. per lb. on Virginia Bunch, and 1.5d. per lb. on all other varieties.

In No. 2 Pool the first advance on all varieties was at the rate of 0.5d. per lb.

One of the effects of the new legislation is that peanuts for disposal other than through the Board are now required to be graded by the latter in accordance with prescribed standards.

A grading depot established by the Board in Brisbane commenced operations in May last.

In addition to Kingaroy and Brisbane, the Board has depots at Rockhampton and Atherton.

NORTHERN BLYWOOD AND VENEER BOARD.

The Board is empowered to function to 2nd May, 1942.

In July, 1939, Messrs. Hancock Bros. Pty. Ltd., disposed of their interests to a new company, Messrs. Australasian Timber Co. Pty. Ltd.

Operations were severely hampered during the months of January, February, March, and April, owing to continued wet weather, but notwithstanding this the output was almost double that of the preceding year. It must be noted, however, that in the year 1938-39, Messrs. Standply Timber Co. Pty. Ltd. did not commence operations in Northern Queensland until May, 1939.

The deliveries of controlled plywood for the year amounted to 16,807,714 square feet, calculated on the equivalent of 3/16-inch thickness, the distribution of same being as follows:—

	Square feet.
Queensland	788,740
Interstate	13,566,081
Overseas	2,452,893
	16,807,714

the value being £123,946.

The overseas deliveries represent 14.6 per cent. of the total, the sales having been made mainly in plywood sheets to the United Kingdom, and in tea, rubber, and cocoanut chests to the East.

A voluntary levy of 1d. per 100 square feet, based on the equivalent thickness of 3/16 inch, was paid by members to the Plywood and Veneer Board (Southern Queensland), which in return defrayed all expenses necessary in the conduct of the Northern Board.

PLYWOOD AND VENEER BOARD (SOUTHERN QUEENSLAND).

The Board is empowered to function to 2nd May, 1942.

The co-operation with the plywood manufacturers in the Southern States referred to in the last report has been satisfactorily maintained to the advantage of manufacturers and distributors alike, and to the users of the product, as through the combined efforts it has been possible to improve and extend the policy of uniformity in distribution.

The Council for Scientific and Industrial Research has continued its activities in relation to plywood, and as a result of such investigations most manufacturers now have installed plants for treating any species of veneers which may be susceptible to attack by the *Lyctus* borer.

A satisfactory arrangement has been concluded with the Sub-Department of Forestry whereby a technologist has been engaged to conduct research work relative to problems of manufacture. The Sub-Department is to provide the laboratory and other facilities for the carrying out of his duties and the Board is to reimburse the Sub-Department for his salary.

Deliveries for the year were 43,015,024 square feet, based on the equivalent of 3/16-inch thickness, against the previous year's total of 43,966,396 square feet. This shows a decrease of 951,372 square feet, but consideration must be given to the fact that for ten months of the 1938-39 period, ten factories were in operation, whereas only nine factories operated for the 1939-40 period, Messrs. Standply Timber Co. Pty. Ltd. having transferred their plant to North Queensland in May, 1939. The discrepancy in output is more than balanced in the turnover of the Northern Plywood Board.

The distribution of sales was as follows:—

	Square feet.
Queensland	7,530,863
Interstate	28,657,018
Overseas	6,827,143
	43,015,024

the value of same being £338,736.

A comparison of the combined figures of this Board and the Northern Plywood Board with those of the previous year will show a decrease of 2,145,439 feet in the Queensland and interstate sales, due to a falling off in the demand for building timbers since the outbreak of war. This decrease, however, is more than made up by overseas sales, the combined deliveries of which, for both Boards, show the substantial increase of 9,198,876 feet.

The big demand for overseas, which is accounted for by present world conditions, began in December last, the major portion being for plywood sheets for the United Kingdom and to a lesser degree for plywood cut to sizes for tea, rubber, and cocoanut chests for the East, the enquiries for which are appreciably increasing.

The levy for administrative purposes was reduced as from 3rd July, 1939, to 1d. per 100 square feet on deliveries calculated on the basis of 3/16 inch equivalent; this reduction was made possible by the elimination of bonus discount paid to interstate distributors for quantities purchased, the manufacturers in its stead increasing the rate of commission payable by them.

The cost of administration averaged 1.008d. per 100 square feet on the basis of 3/16 inch equivalent, while quantity discount paid to and including provision for payments due to buyers in Queensland absorbed .015d., making a total of 1.023d.

WHEAT BOARD.

The Board operates under "*The Wheat Pool Acts, 1920 to 1930.*" The Acts have been proclaimed to extend to wheat until and including the 1943-44 season.

1938-39 Season.—An area of 442,017 acres was planted, as compared with 372,935 acres in the previous season. An abnormally favourable season resulted in a record crop of 8,583,736 bushels.

For the first time in the history of wheat growing in Queensland, a crop in excess of the State's needs was produced, with the result that 2,760,762 bushels were exported overseas. This wheat had to be sold on the world's free market, on which, because of an over-supply, prices were at a record low level. Average realisation on exports was 1s. 4.94d. per bushel, as compared with an average of 2s. 6.14d. for milling wheat sold to local flour millers. Average realisation for the season's sales, both local and export, was 2s. 1.55d. per bushel.

With a return to world-wide low wheat values in 1938-39, after the position had been temporarily relieved by two consecutive seasons of drought in North America, the Commonwealth Government resumed the granting of financial assistance to wheatgrowers in Australia. By "*The Wheat Industry Assistance Act, 1938.*" Queensland was allotted £149,348 15s. 10d., for distribution among wheatgrowers in this State in proportion to the quantity of wheat delivered to the Board by each grower during the year ended 30th September, 1939.

The distribution of the bounty in Queensland worked out at a payment at the rate of 4.549d. per bushel.

These funds were obtained by a sales tax on flour, the rate of which at the 30th June, 1939, was £5 10s. per ton, increased on the 16th July to £6, and to £6 2s. 9d. on 11th August. Since then, the tax has been reduced from time to time, the rate at 30th June, 1940, being £1 15s. 5d. per ton. These reductions are attributed to the improvement in wheat prices in Australia, after the declaration of war, as the rate of tax varies inversely with the market price of wheat.

The quantity of wheat delivered to the 1938-39 pool and the net payments to growers on rails at loading stations are set out hereunder:—

		Deliveries.	Percentage.	Payments.*
		Bushels lb.		s. d.
Milling—				
Q. 1		4,495,726 58	56.40	1 11 11/16
Q. 2		2,648,980 13	33.23	1 10 8/16 to
				1 9 3/16
Q. 2A		694,109 19	8.71	1 8 11/16
				to
				1 6 11/16
		7,838,816 30	98.34	
Feed—				
F. 1A		63,825 10	.80	1 5 11/16
F. 1		58,616 27	.74	1 5 11/16
F. 2		9,405 37	.12	1 5 11/16
		7,970,663 44	100.00	

* In addition to these payments growers received the Commonwealth bounty of 4.549d. per bushel.

The weight loss amounted to 159,226 bushels 21 lb., or 2 per cent. of the intake weight. Pool expenditure amounted to £84,431 5s. 4d., or 2.542d. per bushel. An amount of £8,570 2s. 1d. was paid to growers as hail insurance compensation, and a balance of £17,328 19s. 1d. remains in the Hail Insurance Reserve Fund.

1939-40 Season.—In September, 1939, after the outbreak of war, the Commonwealth Government announced its intention to utilise its powers under *The National Security Act* to acquire all wheat in Australia. The Australian Wheat Board was appointed to handle and market the 1939-40 crop. Queensland was not affected by the control exercised by the Board over the 1938-39 Australian carry-over.

The Australian Wheat Board agreed to exempt the Queensland 1939-40 crop from acquisition because of the peculiar position of this State and the fact that normally the production of wheat was below the State's needs. A sales agreement was arranged with the Queensland flour millers for their requirements of approximately 4,500,000 bushels, at a price for Q2A wheat (the third grade of milling quality wheat in the Queensland classification) equivalent to the Sydney home consumption price for bagged wheat, as declared from day to day by the Australian Wheat Board, less railage to Brisbane, on rails Queensland country stations. This price was to be averaged over the whole period of delivery, i.e., from 1st December, 1939, to 31st October, 1940. Premiums of 1½d. and 3d. per bushel, as in former years, were to be paid for wheat of the Q2 and Q1 grades respectively. An equalising provision was inserted requiring Darling Downs mills, whilst continuing to enjoy the extra 25s. per ton advantage in the selling price of flour, to pay an extra 2½d. per bushel on wheat represented in flour sold on the Darling Downs and at centres between Toowoomba and Ipswich.

The millers also agreed to bear weight loss on the season's wheat up to 1½ per cent.; the liability of the individual miller in this respect to be limited to a proportion of the weight loss equivalent to the proportion which his quota bears to the total intake.

Wheat was delivered under this sales agreement before, on 21st November, advice was received to the effect that the Federal Government had decided Queensland wheat, in common with all Australian wheat, must come within the Australian Pool. Representations personally made in Canberra by the Premier, Hon. W. Forgan Smith, assured that Queensland's wheat classification system and the sales agreement already made with the millers would not be disturbed, and that any premiums paid for Queensland wheats would be returned direct to the Queensland growers and would not be paid into the Australian Pool.

To assist the Australian Wheat Board to carry out its functions the Minister for Commerce has appointed wheat advisory committees in each of the States.

The Queensland State Wheat Board has been appointed as agent and sole licensed receiver in this State for the Australian Wheat Board, and in that capacity is functioning as in previous seasons, subject to the jurisdiction of the Australian organisation. The outdoor and indoor administrative staff in Queensland remain in the employ of the State Wheat Board, which continues to supervise the general administration of the affairs of the industry in Queensland, including seed wheat selection and distribution, the hail insurance compensation and necessitous growers' seed wheat schemes, and the acceptance of orders and liens from growers in favour of suppliers of cornsacks, oil, and machinery.

On the eve of the harvest the Board was unexpectedly called upon to act as a distributor of cornsacks. Because of disruption due to the war sufficient supplies did not come through the usual trade channels. With the aid of the Department the Board, with great difficulty, secured sufficient bags to hold about 2,500,000 bushels of wheat at a cost of £45,000.

Although the Queensland State Wheat Board has not been accorded representation on the Australian Board, the work of the two bodies has been integrated by the appointment of the State Board's chairman as supervisor for the Australian Board in Queensland.

The Queensland Board is being paid a commission to cover cost of the services rendered in receiving and storing the grain and in administering the acquisition plan in this State.

The millers are paying the sole licensed receiver in this State for the Australian Board weekly for wheat supplied, the proceeds being placed to the credit of the Australian Wheat Board account, but the quality premiums and the 2½d. per bushel premium on Downs flour sales referred to in the foregoing are payable to the Queensland Board for the sole benefit of Queensland growers, and will be distributed at the end of the season as an additional payment or bonus by the Queensland Board.

As a result of arrangements by the Commonwealth Government with the Commonwealth Bank of Australia, the Australian Wheat Board obtained financial accommodation to enable the payment of a first advance to growers at the rate of 2s. 10½d. per bushel for bagged wheat and 2s. 8½d. per bushel for bulk wheat less, in both cases, freight from railway siding or other delivery points to the port of overseas shipment. This advance was payable upon delivery of the wheat to the agents of the Australian Board. The average net payment to the Queensland grower under this arrangement was equivalent to 2s. 5½d. per bushel at country stations. The total sum advanced to all growers in Australia amounts to £23,500,000. Other expenditure associated with the marketing of the crop covering such items as handling charges, storage, and administration costs has brought the Board's total expenditure, as at 30th June, 1940, to over £28,250,000.

This outlay by the Commonwealth Bank, guaranteed by the Commonwealth Government, is to be recouped by moneys representing market realisations and the proceeds of flour tax collections. The actual cash receipts to date are approximately £10,000,000, including about £426,000 from flour tax collections, the present overdraft amounting to about £18,000,000.

It is not practicable at this stage to estimate what the realisations for the 1939-40 crop are likely to be. The governing factors in this regard are the availability of overseas shipping space and the preservation of all wheat stocks from loss by weevil or mice or other infestation until same is actually used in Australia or exported overseas.

By courtesy of the Australian Wheat Board the following table shows the approximate stock position in relation to the crop:—

	Million Bushels.
Estimated yield	216
Retained on farms for feed and seed purposes	20
	196
Domestic consumption for the year	38
Available for export	158
Sold for export	92
Still to be sold for export	66
Of the quantity sold for export, ships are still to be chartered or booked for	53
Total unsold, plus export sales for which ships are not yet chartered or booked	120

The Queensland estimated yield is approximately 6,585,000 bushels from an area of 361,000 acres, approximately. A total of 6,251,149 bushels has been delivered to the licensed receiver.

GENERAL.

In performance of the obligation imposed upon me by the Acts, the following comment completes my summary of the work done and investigations made during the year.

My appointment as Director of Marketing was confirmed on the 14th December, 1939.

Approximately two months in the early portion of the period under review were spent in various parts of the State, on an investigation as a member of the Timber Industry Advisory Committee, which had been re-constituted to inquire into and report upon various phases of the timber industry in Queensland.

Immediately before the outbreak of war, two committees of inquiry to investigate the cold storage facilities available in Brisbane in relation to requirements for natural expansion of the primary industries concerned, and needs arising from a national emergency engaged attention.

The activity of the Marketing Branch was intensified when, on the outbreak of war, marketing control over a number of primary products was exercised by the Commonwealth Government through State instrumentalities. The Director was called on to serve on State committees appointed under the National Security Act to assist in implementing Commonwealth control schemes for the war-time marketing of wheat, barley, and apples and pears.

In December, the Queensland Government was represented by the Director at a conference in Melbourne on the institution of a scheme to control the importation of jute goods into Australia.

In May last a ballot was held to decide whether effect would be given to a petition received from the requisite number of tobacco-growers requesting that the operations of the Primary Producers' Organisation and Marketing Acts be extended to tobacco leaf with certain modifications, particularly in relation to the pooling of the product. Representatives of the growers, in consultation with the Minister, had agreed that the creation of a board under the Acts would be a necessary preliminary to the eventual establishment of a specially designed marketing organisation for tobacco leaf, composed of representatives of the growers, the manufacturers, and the Government. The proposal was defeated because the prescribed three-fifths affirmative majority was not secured at the ballot. The voting resulted in 218 votes being cast for the proposal, 207 against, and two informal.

The possibilities of improving existing methods of marketing pigs were closely examined during the year. A conference of pig industry representatives convened by the Minister decided the time was not opportune for the submission to growers of a proposal to establish a State-wide marketing board for pigs. A conference attended by representatives of growers, processors, and departmental officers, affirmed the desirability of introducing a system of payment for pigs according to grade and quality. A committee was set up to go further into the matter.

During the 1939 session of Parliament, "*The Primary Producers' Organisation and Marketing Acts, 1926 to 1938*," were further amended to ensure that the commodity "pigs" included the carcasses or parts of the carcasses of pigs; also to remove certain minor anomalies.

In the course of the same session the Peanut Industry Protection and Preservation Act also was passed.

H. S. HUNTER,
Director of Marketing.

REPORT OF THE REGISTRAR OF PRIMARY PRODUCERS' CO-OPERATIVE ASSOCIATIONS.

"THE PRIMARY PRODUCERS' CO-OPERATIVE ASSOCIATIONS ACTS,
1923 TO 1934."

In accordance with Rule 53 of Part II. of the Schedule to the abovenamed Acts, I have the honour to submit, for transmission to the Governor in Council, my report for the 30th June, 1940.

Since my last report, 1 additional Association—The Queensland Live Stock Producers' Co-operative Association Limited—has been registered, making a total of 210 Associations and 2 Federations registered under the Acts.

During the period of operation of the Acts, 4 Associations have amalgamated with others and 15 have wound up voluntarily, leaving a total of 191 Associations and 2 Federations on the Register.

In the course of the year, amendments to the rules of a number of Associations were registered.

An increase of 2 in the number of licensed auditors has brought the total to 222.

The number of exemptions from the provisions of the Acts stands at 29.

Yours faithfully,

A. J. EVERIST,
Registrar.

By Authority: A. H. TUCKER, Government Printer, Brisbane.

Price, 1s. 3d.]

